MISSOURI RIVER CHANNEL STABILIZATION AND NAVIGATION PROJECT

HEARINGS

BEFORE THE

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

EIGHTY-SECOND CONGRESS

SECOND SESSION

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JUL 17 1952

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Printed for the use of the Committee on Appropriations

UNITED STATES
GOVERNMENT PRINTING OFFICE
21544 WASHINGTON : 1952

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MISSOURI RIVER CHANNEL STABILIZATION AND NAVIGATION PROJECT

MONDAY, JUNE 30, 1952.

PRESENT

LT. GEN. LEWIS A. PICK, CHIEF OF ENGINEERS
BRIG. GEN. C. H. CHORPENING, ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS
BRIG. GEN. D. G. SHINGLER, DIVISION ENGINEER, MISSOURI RIVER DIVISION
COL. L. J. LINCOLN, DISTRICT ENGINEER, KANSAS CITY, MO.
F. B. SLICHTER, OFFICE, CHIEF OF ENGINEERS
G. L. BEARD, OFFICE, CHIEF OF ENGINEERS
W. H. BETZLER, OFFICE OF BOARD OF ENGINEERS FOR RIVERS AND HARBORS
C. N. THOMPSON, OFFICE OF BOARD OF ENGINEERS FOR RIVERS AND HARBORS
WENDELL JOHNSON, OFFICE OF DIVISION ENGINEER, MISSOURI RIVER DIVISION

ALSO PRESENT

JOHN J. DONNELLY, JR., COMMITTEE COUNSEL

Mr. CANNON. Mr. Chairman, as will be remembered, last year this committee requested the Corps of Engineers to make and to submit to the committee planning reports on all projects under construction. Pursuant to that direction, they have submitted, I believe in January 1952, a report on the Missouri River Channel stabilization and navigation project, which covers the area on the lower Missouri River, from the mouth to Sioux City. This report was in two sections: One was for the portion of the river from the mouth up to Kansas City; and the second, from Kansas City up to Sioux City.

The Corps of Engineers reported in this planning report a benefit-cost ratio for this project of 1.9 to 1. In this connection the committee will recall the committee's study last year of the benefit-cost ratio reported by the corps for the proposed Tennessee-Tombigbee waterway. For that proposed project the corps reported a favorable benefit-cost ratio of 1.13 to 1. The committee had extensive hearings on this matter, and it appeared that the benefit-cost ratio was actually far below unity, and possibly as low as 0.27 to 1.

So, the committee directed the staff to make an analysis of the benefits reported by the corps for the Missouri River project. The staff's analysis at this point has discerned what appear to be weaknesses in the methods used by the corps in computing the ratio for the Missouri River. The hearing this morning is for the purpose of receiving a report from the staff of the developments to date of its study of the matter. We have invited the Corps of Engineers to be present to observe the staff's presentation of its work to date, and we are

very glad to have with us here today General Pick and other representatives of the corps.

We will now ask Mr. Donnelly, counsel for the committee, to make the staff's presentation of the developments in the staff's study.

Mr. Donnelly, counsel for the committee.

Mr. McGrath. Do you have any suggestions, Mr. Chairman, as to the procedure we should follow?

Mr. Cannon. It occurs to me that we might hear the staff's report without interruption, and at the close of the report of the staff, to have any suggestions from the members of the Corps or from the members of the committee.

Mr. McGrath. Very well, Mr. Donnelly.

Mr. Donnelly. Thank you, Mr. Chairman.

Presentation of Developments in Staff's Study

The staff's study has been quite extensive to date for the portions of the planning report dealing with the computation by the corps of benefit-cost ratio, so the presentations made here today will be based actually on the statistics and reports of the Corps of Engineers and other Government agencies.

Planning Report, Missouri River From Kansas City to the Mouth

The first report to which I would like to invite the attention of the committee is the planning report which was submitted by the corps to the committee in January 1952. With respect to the portion of the Missouri River from Kansas City to the mouth, the planning report summarizes in this language, and I am quoting now from page 1:

> The existing project, Missouri River, Kansas City to mouth, provides for a channel of 9-foot depth and width not less than 300 feet. The original authorization in 1912 provided for securing a channel of 6-foot depth by means of revetment and dikes and removal of snags, and was later revised in 1925 to provide for the minimum width of 200 feet, with a reasonable additional width around the bends. In 1945 the project was modified to provide for securing a channel of 9-foot depth, 300 feet wide by the addition of cut-offs to eliminate long bends, chute closure dikes to close minor channels, dredging and the methods employed under the 6-foot channel project. Reasons for the changes are explained in section B of the planning report.

The first authorization act involved in the section of the Missouri River from Kansas City to the mouth was the River and Harbor Act of 1912 which authorized a 6-foot depth. And in this connection, I might advise the committee, that the navigation project for the lower Missouri River well antedates development or thought of the Pick-Sloan plan, or any storage reservoir projects in the upper Missouri River. The River and Harbor Act of 1925 authorized a minimum width of 200 feet. And finally the River and Harbor Act of 1945 contained a provision for a navigable channel of 9-foot depth and a minimum width of 300 feet.

I am quoting now from page 2 of the planning report under the heading "Location and description":

> The present project between Kansas City (upper end of Quindaro Bend, mile 386.2) and the mouth * * * provides for securing a channel of 9-foot depth and width of not less than 300 feet by construction of permeable pile dikes to

contract and shape the waterway; pile revetment, accretion paving and standard revetment to shape and stabilize the banks; cut-offs to eliminate both sharp and protracted horseshoe bends; chute closure dikes to close minor and diverted channels; removal of snags; and dredging where necessary.

In the course of construction operation, we will find by reference to this report, there was and is considerable rock in the bed of the river. It is estimated that up to the date of this report, January 1952, the corps had expended $812,700 for rock removal, and the corps reports here that an additional amount of $825,000 will be needed to complete the work of removal of the rock from the river.

With reference to the status of construction, this report states on page 4:

The construction program was 77 percent complete at the end of fiscal year 1951 and is expected to be 79 percent complete at the end of fiscal year 1952. The estimated date of completion is fiscal year 1958, provided funds are made available—

in such amounts and at such times as the Corps deems desirable.

Now, passing to the upper section of the river—and I may say the total project is 760 miles long.

Mr. KERR. Are you quoting from their report?

Mr. DONNELLY. From their report, yes.

Mr. KERR. From the engineer's report?

Mr. DONNELLY. These quotations are all from the engineer's report.

Mr. KERR. These are quotations from their report.

Mr. DONNELLY. Yes.

Mr. KERR. Very well.

Mr. DONNELLY. All of this will be based on the actual reports of the Corps of Engineers, and we have not initiated anything, except by development from the data in these reports and data which we have examined in reports of other official governmental agencies, such as the Bureau of Agricultural Economics, and the Geological Survey.

KANSAS CITY TO SIOUX CITY

Now, for the second portion of the river, from Kansas City to Sioux City, we find by way of description that the project—

provides for a channel of 9-foot depth and a width of not less than 300 feet to be secured by essentially the same basic methods as were originally authorized in 1927 for a 6-foot depth and width not less than 200 feet, namely, by means of permeable dikes, revetments, snagging and dredging.

We find this project was authorized in the River and Harbor Act of 1927 for a 6-foot navigation channel, and there were subsequent authorizing acts dealing therewith, and in the 1945 River and Harbor Act there was provision for increasing the 6-foot channel project to a projected 9-foot navigation channel.

Again, with respect to this section of the river we find the estimated cost of removing the rock in the bed of the river at $401,500, and the corps states in this report that the cost will be an additional $330,000 for removal of the rock.

With respect to the status of construction, the report states that the status of completion is 57 percent as of June 30, 1951, and it is anticipated it will be 59 percent completed at the end of the fiscal year 1952, with the scheduled completion date as 1960, provided

Congress makes funds available in such amounts and at such times as the corps deems necessary.

Mr. Chairman, I ask that there be printed at this point in the record these two maps from the planning report which show the project from the mouth of the river to Kansas City, and from Kansas City to Sioux City.

Mr. RABAUT. Without objection, they will be printed at this point.

(The two maps face this page.)

Mr. DONNELLY. Mr. Chairman, in a report on this project by the Missouri River Division of the Corps of Engineers, dated July 28, 1950 we find at page 68 this statement:

> Under natural conditions, the distances between high banks of river varied from about 1,000 feet to more than a mile. The average distance was about 3,200 feet.

Now, one of the things the Corps of Engineers does in developing this project is to narrow the banks of the river, compress and narrow the banks of the river. In the course of stabilizing the channel, they narrow the natural width of the river.

SCOPE OF THE PROJECT

By way of considering this project we have prepared a visual presentation with charts and graphs, rather than just to read a lot of statistics. We have charts which will tell the story. I ask that the first chart be inserted in the record at this point.

Mr. RABAUT. Without objection.

(The chart is as follows:)

Missouri River, Sioux City to mouth (760 miles), benefit-cost ratio, 1.9 to 1

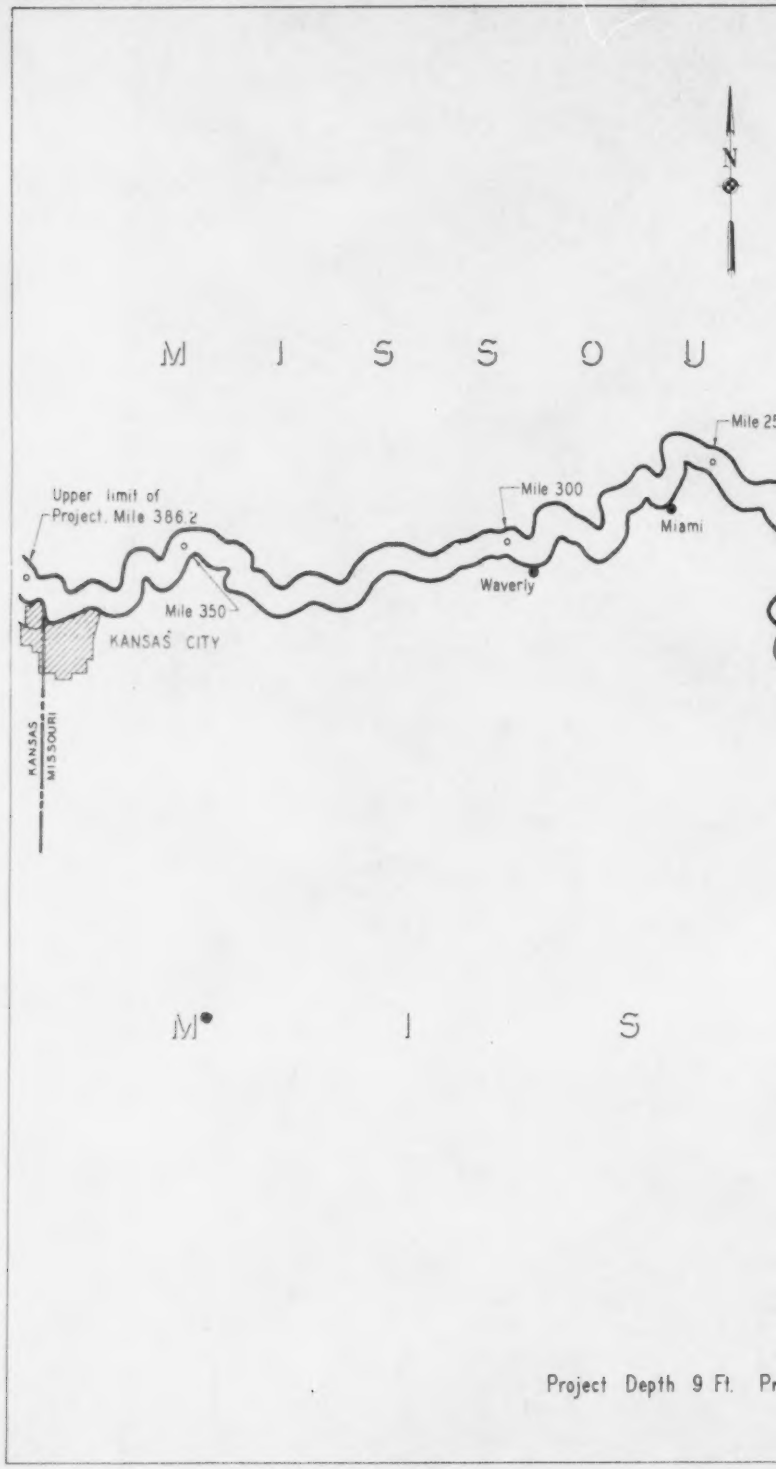
Average annual benefit:	
Navigation	$6, 699, 000
Erosion control	19, 877, 000
Total	26, 576, 000
Average annual charges	14, 315, 000
Funds expended through fiscal year 1951:	
Maintenance	67, 149, 494
New works	194, 786, 604
Total	261, 936, 098

Source: Corps of Engineers, Planning Report, January 1952. Corps of Engineers, Missouri River Division, Report on Missouri River navigation project, July 28, 1950.

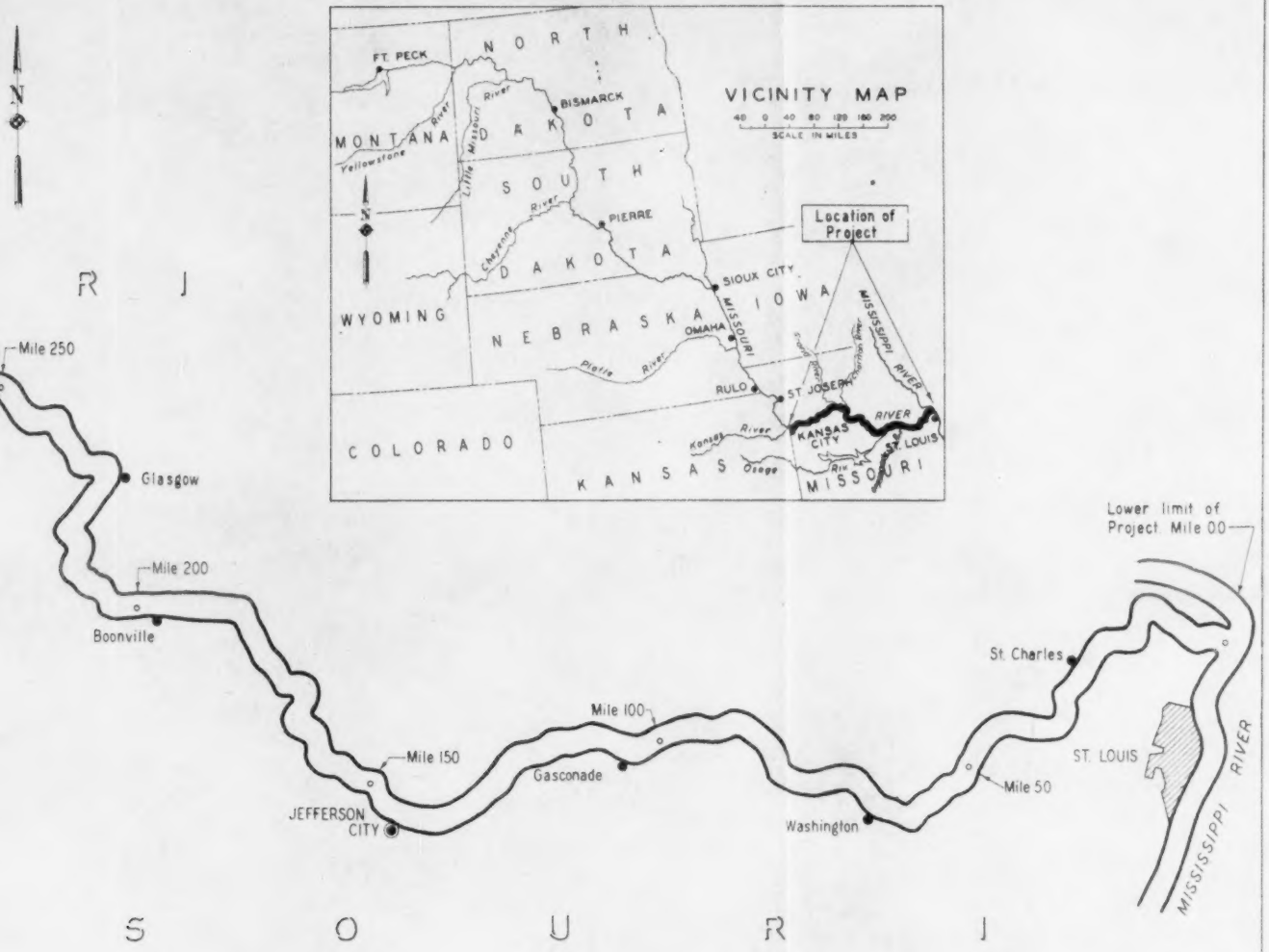
Mr. DONNELLY. The first chart shows the scope of the project, that is, from the mouth of the Missouri River to Sioux City, a distance of 760 miles, with the benefit-cost ratio, stated in the corps' planning report of January 1952 to be 1.9 to 1. In achieving that ratio and arriving at that benefit, the Engineers have broken down benefits as follows: Navigation benefits, $6,699,000; and erosion control, $19,877,000; for a total shown here, $26,576,000.

The staff, in analyzing the navigation benefits as stated here, and the erosion benefits stated here, were impressed with what appears to be a decided weakness in the methods used by the Corps of Engineers. The staff did not go into the average annual charges of $14,315,000. And we have here at the bottom a total of more than a quarter billion dollars spent on this work up to June 30, 1951, for this project, namely, $261,936,098.

CORPS OF ENGINEERS



Project Depth 9 Ft. Pr



MISSOURI RIVER
KANSAS CITY TO MOUTH

SCALE IN MILES
10 0 10 20 30

Missouri River Division
Kansas City District
January 1952

Ft. Project Width 300 Ft.

CORPS OF ENGINEERS

I O

NEBRASKA

PROJECT DEPTH 9 FT.

U.S. ARMY

MISSOURI RIVER

KANSAS CITY TO SIOUX CITY

SCALE IN MILES

10 0 10 20 30 40

MISSOURI RIVER DIVISION
OMAHA AND KANSAS CITY DISTRICTS
DECEMBER 1951

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The source of these data, as I have stated before, is the planning report of January 1952, and the Missouri River division report, which is the green document here, dated July 28, 1950, upon which the planning report figures are based.

Navigation Benefits

COMPARISON OF TENTATIVE AND REVISED REPORTS

I ask that the second chart be inserted in the record at this point. It is entitled "Comparison of Tentative and Revised Reports."

Mr. Rabaut. Without objection.

(The chart is as follows:)

Comparison of tentative and revised reports

	Tentative	Revised
Potential tonnage (annual)	4,000,000	5,000,000
Year after completion when the estimated tonnage will obtain	50th (2010)	20th (1980)
Annual savings in transportation costs after full development of potential tonnage	$9,140,730	$15,000,000
Average annual benefits during economic life of the project (1960–2010)	[1] 4,900,000	13,398,000
Annual benefits assignable to this project by the engineers	[1] 2,450,000	6,699,000

[1] This figure was not given in the tentative report. It was computed by the staff of this committee on the basis of data in that report.

SOURCES

Tentative: Tentative Report on the Transportation Economics Phase of the Missouri River Survey of 1950 (prepared by Clyde N. Thompson, transportation economist, assisted by staff personnel of the Board of Engineers for Rivers and Harbors, the Missouri River Division Office, the Omaha District Office, and the Kansas City District Office; under the supervision of A. L. Malone, Chief, Survey Branch, Economics Division, Board of Engineers for Rivers and Harbors, pursuant to the provisions of O. & R.), May 4, 1950.

Revised: Report on Missouri River Channel Stabilization and Navigation Project, Sioux City to Mouth, Appendix III, Benefits. Corps of Engineers, U. S. Army, Office of the Division Engineer, Missouri River Division, Omaha, Nebr., July 28, 1950.

Mr. Donnelly. On this chart is shown how things grow from a small beginning. This column labeled "Tentative" is a column of figures which was compiled by the specialists of the Board of Engineers for Rivers and Harbors, created by Congress in order that there would be a body of specialists, economic experts, on this matter of developing such things as economic benefits.

The specialists on the Board of Engineers for Rivers and Harbors, assisted by the Missouri River division at Omaha, the Omaha district, as well as the district office in Kansas City, of the Corps of Engineers, made a study and they have presented the study which we have here. In this study is shown a potential tonnage benefit of 4 million tons, to be achieved 50 years after completion, in 2010, with projected annual saving of $9,140,730. After full development of potential tonnage they found an average annual benefit during the economic life of the project of $4,900,000, of which $2,450,000 is assignable to this project.

This figure we have had to compute from the data used in this tentative report of these gentlemen from the Board of Engineers for Rivers and Harbors.

Now, the Corps of Engineers has taken this figure of $4,900,000 and cut it in half, because they assign certain portions of the navigation benefits to upstream reservoirs, so the figure they use is $2,450,000.

This figure is comparable, as you will see, to this figure, $6,699,000, in the "Revised" column.

Now, obviously, the $2,450,000 figure is less than half of the $6,699,000 figure as shown here [indicating].

I might also invite the committee's attention to the fact that this study was made by Clyde N. Thompson, transportation economist of the Board of Engineers for Rivers and Harbors, and he was assisted by the staff personnel of the Board, also by the Missouri River division office for the corps, and the Omaha district and the Kansas City district offices, all under the supervision of A. L. Malone, Chief, Economic Division, Board of Engineers for Rivers and Harbors, pursuant to orders and regulations of the Corps of Engineers.

BASIC ORDER RESULTING IN STUDY OF BENEFITS OF PROJECT

I now offer for the record the basic order which resulted in the study of the benefits of this project. It is dated December 6, 1949, signed by S. D. Sturgis, brigadier general, Corps of Engineers, division engineer.

In this document the following statement is pertinent to what we are going into here:

Current situation.—Construction operations have been in progress on the Missouri River for many years, yet a 9-foot channel is not available on any substantial part of the river, and a dependable 6-foot channel is available only on the lower river. A full appraisal should be made of this situation.

Requirements for report.—Preliminary study of the navigation project from Sioux City to the mouth of the Missouri River, made by the division engineer during the last 6 months, indicates the need for additional information to determine the *current* justification of this project * * *.

Passing over to the paragraph on benefits:

All benefits which will result from completion of the navigation project should be fully evaluated. These include navigation benefits, land accretion and betterment, erosion and other protection to lands and structures.

I would like to present this for the record.

Mr. RABAUT. Without objection, it will be made part of the record.

(The matter referred to follows:)

DECEMBER 6, 1949.

Subject: Report on Missouri River Navigation Project.
To: Mr. Wendell E. Johnson, Chief, Engineering Division, Missouri River Division.

1. REQUIREMENT FOR REPORT

Preliminary study of the navigation project from Sioux City to the mouth of the Missouri River, made by the division engineer during the last 6 months, indicates the need for additional information to determine the current justification of this project and discloses several major problems in the fields of construction and maintenance which, at this time, require restudy from the viewpoint of integration into the comprehensive plan for the Missouri Basin. Accordingly, it is requested that the Engineering Division make a thorough investigation and prepare a report for the division engineer which will supply the necessary information and contain recommendations capable of adoption as a basis of future action to be taken by the Corps of Engineers with reference to the navigation project.

2. CURRENT SITUATION

(a) Construction operations have been in progress on the Missouri River for many years, yet a 9-foot channel is not available on any substantial part of the river, and a dependable 6-foot channel is available only on the lower river. A full appraisal should be made of this situation.

(*b*) Limited commercial navigation was commenced on the lower river prior to World War II. However, navigation has not expanded since the war, and there is no apparent indication that an early expansion is in prospect. Such expansion is needed in order for the project ultimately to become economically justified and the investment of Federal funds made to date realized.

(*c*) A system of agricultural levees has been authorized for construction along the Missouri River from Sioux City to the mouth, which is dependent upon stabilization of the river by the navigation structures in order to be effective. Construction of these levees is progressing rapidly and bank stabilization should, of course, be effected in a given area before the levees are constructed.

(*d*) Fort Randall Dam is scheduled for closure about 1952. Silt movements and the river regimen may be affected by this closure, and they, in turn, may have a bearing on design, construction, and maintenance of the works, particularly on the upper river.

(*e*) The situation as stated above is no doubt receiving consideration by the engineering division and the district offices, but it should be fully covered in appropriate parts of the report, including the recommendations.

3. GENERAL NATURE OF REPORT

The report should include the history and present status of the project, work required to complete construction, estimated effectiveness of project, a thorough investigation of commerce and other benefits which may be expected, careful consideration of the economics of the project, and final conclusions and recommendations. A tentative outline for the report is enclosed.

4. SCOPE OF THE REPORT

(*a*) *History.*—In the history of the project, the basis for the present plan of action and the relation of progress made to date to appropriations should be stated. The history should not be comprehensive but rather objective, selections being limited to those which furnish background essential to current problems and their solution.

(*b*) *Present Status.*—The present status should not only contain information concerning structures completed to date, but should indicate the channel depths in effect in the various parts of the project, the protection afforded from erosion, and the land which has been reclaimed as a result of construction of the navigation works.

(*c*) *Work required to complete project.*—A comprehensive layout of structures required to complete the 9-foot channel should be made and illustrated by maps accompanying the report. This should be supplemented by a complete estimate of the cost of the above work and the final over-all cost of the navigation project. This estimate should include the cost of all structures required to bring the project to such a state of completion that only nominal maintenance will be required for assuring its continued use. Accretion paving and other work necessary to protect the works against damage, except that which may be reasonably expected under ordinary maintenance, should be included in this cost. However, in order that the costs may be compared with those in former estimates, work which previously has been classified as maintenance should be listed under separate items. The time required to complete construction of the project, based on the most practicable schedule, and an estimate of how this might be affected by reduced appropriations, should be discussed in this section of the report.

(*d*) *Estimated effectiveness of project.*—Channel depths and velocities, amount of water available and required, maintenance problems and cost are some of the subjects which should be covered in this section. A comparison should also be made with a slack-water project from Sioux City to the mouth, both as to effectiveness and cost.

(*e*) *Commerce.*—Former estimates of potential commerce should be reviewed and means of developing it should be explored.

(*f*) *Benefits.*—All benefits which will result from completion of the navigation project should be fully evaluated. These include navigation benefits, land accretion and betterment, erosion and other protection to lands and structures.

(*g*) Determination of the economies of the project, and the conclusion and recommendations complete the scope of the report as outlined herein. The scope should be expanded and augmented as found necessary, in order to form the basis for future action by the Corps of Engineers.

5. MAJOR PROBLEMS

There are a number of major problems which must be considered, many of which are apparent from a review of the nature and scope of the report. The following are listed below to emphasize their importance: determination of effectiveness of present methods for insuring a 9-foot channel; definite determination as to whether a slackwater project should be considered for any part of the river from Sioux City to the mouth; reasons why river commerce has not met expectations and means for improvement; analysis of justification of the project; an examination of utility experience of our plant and an analysis of whether hired labor and contract work are in the most efficacious and economical proportions; the degree of criticality involved in failure to complete the project to Sioux City prior to completion of the Fort Randall Reservoir; a redetermination of what is maintenance and what is improvement and a sound estimate of ultimate maintenance cost; best estimate of quality of water which will be required for minimum navigation requirements (at least an interim solution of this problem seems essential); the future plan of action which should be adopted.

6. ADMINISTRATIVE GUIDANCE

The report should be prosecuted during off-season months and the district offices should be used to the maximum, not only for data but for subordinate studies and views. However, the engineering division will be responsible for the finished report and for the conclusions and recommendations contained therein. The cost of the report should be allocated to the appropriate sections of the river under the appropriation 21X3000, M and I, of existing river and harbor works, and arrangements should be made for budget of the cost thereof both by the division and district offices. The report should be delivered to the division engineer by March 1, 1950.

7. INTERIM REPORT

If in development of the investigation should it become impractical to complete the entire report by March 1, 1950, an interim report may be submitted on that date and the final report submitted July 1, 1950. The interim report should include the following (see par. 4):

(*a*) History and present status of project.
(*b*) Work required to complete project.
(*c*) Approximate estimates of effectiveness of project and benefits.
(*d*) Tentative conclusions and recommendations.
(*e*) Commerce and economics of the project to the extent required to arrive at tentative conclusions and recommendations.

The interim report may also contain recommendations concerning the scope of the final report.

S. D. STURGIS, Jr.,
Brigadier General, CE,
Division Engineer.

Mr. DONNELLY. The Corps of Engineers, through the orders and regulations such as I have mentioned, have available to their division offices, including the Missouri River division, assistance of the expert consultants and the economic specialists of the Board of Engineers for Rivers and Harbors.

I am quoting now from section 4206.23 of the Orders and Regulations, Corps of Engineers, subsection c:

In order that the determination of the transportation benefits may be made with a maximum of soundness and consistency, the Board of Engineers for Rivers and Harbors maintains a staff of economics specialists who are available to assist reporting officers by furnishing guidance on transportation studies of major importance or complexity. On reports involving transportation studies, division and district engineers will furnish data on the nature and scope of the studies and their recommendations as to the necessity for assignment of specialists from the Board's staff.

STUDY BY BOARD OF ENGINEERS FOR RIVERS AND HARBORS

In this situation, officers from the Board went out to the Missouri River project, and on the site and on the scene made an extensive

study of the entire matter, and as a result of their extensive study they submitted a report which was dated May 4, 1950.

Mr. RABAUT. That was a result of this study?

Mr. DONNELLY. This is the result of the study of the specialists of the Board of Engineers for Rivers and Harbors, which went out and made a report. The report was bound in one of the green volumes. In the report of the specialists, which I will describe as the Thompson report, because Mr. Thompson was the specialist who was most active in making this report, it is stated on page 25 of appendix III, that the predicted tonnage figure as shown here of 4 million tons would be realized at the end of 50 years.

This is the full realization the project would reach in 50 years with the estimated tonnage to be 4 million tons.

And in this computation Mr. Thompson and his people produced this figure here of $9,140,730 in the column labeled "Tentative," which is shown in the tabular statement in the Thompson report on page 45 of appendix III as $9,140,730.

DISAGREEMENT BY MISSOURI RIVER DIVISION WITH REPORT OF BOARD OF ENGINEERS

Now, a very peculiar thing happened; when this Thompson report was studied by the Missouri River division of the Corps of Engineers, the expert judgment of Mr. Thompson and his staff was not quite agreed upon by the experts of the Missouri River division, and for that reason, or on that reason, principally, the Missouri River division wrote a paper called Comments on Tentative Report on the Transportation Economics Phase of the Missouri River Survey of 1950. And in those comments they disagreed with the experts of Mr. Thompson and his staff, and decided that their tonnage figure would have to be raised by 10 percent.

So, this is the beginning of this growth of the figures from the tentative report to the revised report. We find them going from $9 million to $15 million, and going from 4 million tons to 5 million tons, and that there is going to be a decrease in time required from 50 years to 20 years.

This is the first step. They say here, page 54:

> However, in view of the foregoing factors, it is conservative to consider that future industrial development will increase future commerce by at least 10 percent over that reported by the survey.

So we find a disagreement between the experts of the Board of Engineers for Rivers and Harbors, created by the Congress for the purpose of making these studies, and the Missouri River division office of the Corps of Engineers.

Mr. KERR. What was this report?

Mr. DONNELLY. Ten percent, Judge Kerr.

Mr. KERR. You mean an increase of 10 percent?

Mr. DONNELLY. They added 10 percent here, 4,000,000 tons [indicating]; and to this figure of $9,140,730 they added 10 percent; they just arbitrarily added 10 percent to these figures [indicating].

Mr. KERR. How do those figures compare with General Pick, the Chief of Engineers?

Mr. DONNELLY. Those of the Engineers?

Mr. KERR. Yes; the Corps of Engineers' figures.

Mr. DONNELLY. Everything here is from the Corps of Engineers.

Mr. KERR. I see.

Mr. DONNELLY. As it turned out, none of these things are actually official reports of the Corps of Engineers; to be an official report, the Chief of Engineers, General Pick, has to put his seal of approval on it.

Mr. KERR. Yes.

Mr. DONNELLY. If you go to the first report, the Thompson report (the tentative report), it was made without the final approval of General Pick; also the Missouri River division report (the revised report) was made without the final approval of General Pick, but what we actually see is that the Planning Report which General Pick submitted to this committee in January 1952 was based on the revised report.

General PICK. May I interrupt for a question, Mr. Donnelly?

Mr. DONNELLY. Certainly.

General PICK. That is the planning report that you asked for in the hearings?

Mr. DONNELLY. Yes; the committee passed a resolution asking for it.

General PICK. Yes; and we sent you that.

Mr. DONNELLY. Yes.

General PICK. That is what I wanted to find out; it was the report we sent.

Mr. DONNELLY. This is the planning report; you approved it?

General PICK. Oh, yes; if that is the one we sent as a result of the resolution.

Mr. DONNELLY. Yes; it did have your approval?

General PICK. Yes.

Mr. DONNELLY. It is the figures of the planning report that we are dissecting as we go along here.

General PICK. I just wanted to identify it.

CHANGES MADE IN ESTIMATES OF TONNAGE, ETC., IN COMPUTING BENEFITS

Mr. DONNELLY. Now, the next step in the growth of these figures came about when gentlemen from the Office of Chief of Engineers considered the Thompson report, which I have here in my hand, including the comment of the Missouri River division, which increased the figures 10 percent. The experts from the Office of Chief of Engineers decided that these figures, even though increased by 10 percent, were not enough to build up this economic benefit-cost ratio. So they decided several things. They decided that instead of increasing this figure 10 percent, they would increase it 25 percent, arbitrarily, because they were applying expert judgment which was much better than the judgment of the experts on the Board of Engineers for Rivers and Harbors.

They also decided to decrease this period of ultimate realization from 50 years to 20 years. In addition, they decided on more tonnage, and they added tonnage instead of the 4,002,000 tons which Mr. Thompson computed, which is comparable to this figure of 4 million on the chart under "Tentative," they decided that it should be 4,074,000 tons.

Now, it may sound to some that the addition of the 72,000 tons is not going to make much difference, but it results in giving you a much higher figure over here in the final analysis.

REDUCTION IN ESTIMATED BENEFITS BY THOMPSON REPORT BECAUSE OF RAIL FACTOR

In addition, Mr. Thompson and his people had, in computing the benefits, decided that there should be a reduction from the higher figure to get this figure of $9,140,730 [indicating], because of the fact that the rail rate possibly would be reduced by virtue of barge competition, and the Missouri River division, in its comments on this report, had this to say, and this is found on page 53.

In thus determining the total annual benefits of $9,140,730, the computed benefits were reduced 20 percent for grain products and 25 percent for all other commodities, as an allowance for future action of the railroads in rate reduction to meet barge competition.

The factors used by Mr. Thompson (and later concurred in by the Missouri River Division) to make the adjustment are shown on page 45 of this report, and reflect the reduction in potential tonnages, and the explanation of the reference marks is given as follows:

Benefits computed on basis of 20 percent less than the weighted averages shown in Appendixes A and B. All other benefits computed on basis of 25 percent less than the respective weighted averages

So that they have taken a 20- and 25-percent reduction because of the rail factor which will result in this figure of $9,140,000 in the Thompson report, and as I have indicated, the Missouri River division concurred in this matter.

LARGE INCREASES MADE IN THOMPSON'S COMPUTATIONS

Now, we have a document here dated October 26, 1950, which I would like to put in the record at this point.

Mr. RABAUT. Without objection, it will be included in the record.

(The document is as follows:)

MISSOURI RIVER DIVISION,
CORPS OF ENGINEERS, U. S. ARMY,
Omaha 1, Nebr., October 26, 1950.

Subject: Report on Missouri River channel stabilization and navigation project, Sioux City to mouth.

To: The Chief of Engineers, Department of the Army, Washington 25, D. C.

1. Reference is made to letter from this office dated July 28, 1950, subject as above, with which copies of the subject report were furnished to the Office, Chief of Engineers, and to discussions of this report between Messrs. Beard, Weber, and Slichter, and Mr. Wendell Johnson during his visit in OCE in late September 1950.

2. As was explained during the above discussions, further consideration of the evaluation of benefits since submission of the report has led to the conclusion that the navigation benefits as now included in the report are ultraconservative. The principal points considered were the assumed reduction in rail rates for determining current estimates of benefits, the allowance made for future development and consequent increase in traffic and the rate at which traffic will develop.

3. It is considered that currently available railroad rates should be used for comparison with barge costs for determination of savings. Further, it is considered that conservative estimate of future increase in potential commerce, consistent with expected basin development would amount to over 25 percent. From a review of returns from field contacts, it is firmly believed that the considerable interest in early development of commercial navigation would support earlier development of the full amount of traffic. It is considered that a 20-year development period is reasonable. Taking these items into consideration, traffic would

build up such that there would be an annual savings of $15,000,000 from 1980 and on. This would result in an average benefit of about $10,700,000 for the period 1951 to 2010.

4. It is proposed to revise the report to include the reconsideration of benefits. Information is requested as to whether the review to date in the OCE has resulted in any additional changes which should be made at the same time. Revision will be undertaken and insert sheets furnished the OCE as soon as advice is received relative to any other changes which your office feels should be made.

For the Division Engineer:

E. A. BROWN, Jr.,
Colonel, Corps of Engineers, Executive Officer.

Mr. DONNELLY. I would like to read the document. It is signed by the division engineer for the Missouri River division, and addressed to the Chief of Engineers, Department of the Army, Washington 25, D. C., and states:

Reference is made to letter from this office dated July 28, 1950, subject as above, with which copies of the subject report were furnished to the Office, Chief of Engineers, and to discussions of this report between Messrs. Beard, Weber, and Slichter and Mr. Wendell Johnson during his visit in Office, Chief of Engineers in late September 1950.

What he is saying is that the report of the comments on the Missouri River dated July 28, 1950, had been sent by transmittal letter to the Office of Chief of Engineers, and subsequently a conference had occurred on this matter between Messrs. Beard, Weber, and Slichter, who are the gentlemen who are in the Washington office, and Mr. Wendell Johnson of the Omaha office.

Now, paragraph 2 states:

As was explained during the above discussions, further consideration of the evaluation of benefits since submission of the report has led to the conclusion that the navigation benefits as now included in the report are ultraconservative.

This memorandum is stating principal disagreement with this carefully-worked-out Thompson report, and had reference to the figures shown on the first column of the chart under "Tentative" [indicating]; and continuing:

The principal points considered were the assumed reduction in rail rates for determining current estimates of benefits, the allowance made for future development and consequent increase in traffic, and the rate at which traffic will develop.

3. It is considered that currently available railroad rates should be used for comparison with barge costs for determination of savings. Further, it is considered that conservative estimate of future increase in potential commerce, consistent with expected basin development, would amount to over 25 percent. From a review of returns from field contacts, it is firmly believed that the considerable interest in early development of navigation would support earlier development of the full amount of traffic. It is considered that a 20-year development period is reasonable.

They are saying, "Let us forget about 50 years. The Board of Engineers for Rivers and Harbors do not know what they are talking about, even though they made the study. It is not going to take 50 years, it is going to take 20 years to get the ultimate realization of the potential tonnage."

Continuing the quote:

It is considered that a 20-year development period is reasonable. Taking these items into consideration, traffic would build up such that there would be an annual savings of $15,000,000 by 1980 and on. This would result in an average benefit of about $10,700,000 for the period 1951 to 2010.

Now, in paragraph 4 there is this language:

It is proposed to revise the report to include the reconsideration of benefits. Information is requested as to whether the review to date in the OCE has resulted in any additional changes which should be made at the same time. Revision will be undertaken and insert sheets furnished the OCE as soon as advice is received relative to any other changes which your office feels should be made.

Mr. RABAUT. By whom is that signed?

Mr. DONNELLY. Col. E. A. Brown, Jr., Colonel, Corps of Engineers, executive officer for the Division Engineer of the Missouri River Division.

CHANGES MADE IN TEXT OF TENTATIVE REPORT BY MISSOURI RIVER DIVISION OFFICE

Now, the next maneuver in this study on the part of the corps was this:

These two documents that I have in my hand look exactly alike. They have the same cover identically. They both read: "Report on Missouri River, channel stabilization and navigation project, Sioux City to mouth, appendix III, benefits."

The one in my right hand [indicating] is Mr. Thompson's report. If you lift up this little sheet that has been pasted over here, you will see July 28, 1950.

The one in my left hand is the same thing dated the same date, July 28, 1950.

To all intents and purposes they are the identical documents, but they are not. What the Corps of Engineers did was to take pages out of the Thompson report, switch pages, substitute pages and change language. They changed phraseology; they transposed sections without the knowledge of Mr. Thompson or Mr. Malone, the two gentlemen identified here on this chart—Mr. Clyde N. Thompson, transportation economist, and Mr. A. L. Malone, Chief of the Survey Branch, Economics Division, Board of Engineers for Rivers and Harbors.

Mr. RABAUT. Does that little tab pasted on there give any indication that that has been done, or anything?

Mr. DONNELLY. No. This tab just says, "Loaned copy, please return."

Mr. RABAUT. I thought perhaps it might be a notification that the changes had been made.

Mr. DONNELLY. Now, I have made a memorandum of some of the switches that occurred in the report, and I would like to offer this information for the record, entitled "Examples of Changes Made in the Text of the Tentative Report by the Missouri River Division Office". (Reading:)

Comments made in the tentative report for "the primary purpose" of clarifying "the examination, analysis and evaluation extended to the probable future annual commerce" have appeared (pp. 26–31) at the end of that report immediately after presentation of the figures of the *future* commerce and benefits. In general, these comments dwelt on those factors which tend to prevent the development of river traffic.

In the revised report most of these comments (pp. 13 to 17) follow the discussion of *current* traffic. The sentence: "A more optimistic view cannot be taken of commerce that may or could be developed on the Missouri River" (p. 31 of the tentative report) is omitted and a much more optimistic discussion has been put in as section 43, entitled "Future Expansion" (pp. 28 to 29), following presentation of the tonnage and benefits figures based on the field study.

I would like to insert this into the record, if I may.

Mr. RABAUT. Without objection.

(The matter referred to is as follows:)

EXAMPLES OF CHANGES MADE IN THE TEXT OF THE TENTATIVE REPORT BY THE MISSOURI RIVER DIVISION OFFICE

Comments made in the tentative report for "the primary purpose" of clarifying "the examination, analysis, and evaluation extended to the probable future annual commerce" have appeared (pp. 26–31) at the end of that report immediately after presentation of the figures of the future commerce and benefits. In general, these comments dwelt on those factors which tend to prevent the development of river traffic.

In the revised report most of these comments (pp. 13–17) follow the discussion of current traffic. The sentence: "A more optimistic view cannot be taken of commerce that may or could be developed on the Missouri River" (p. 31 of the tentative report) is omitted and a much more optimistic discussion has been put in as section 43, entitled "Future Expansion" (pp. 28–29), following presentation of the tonnage and benefits figures based on the field study.

The sentence "In fact only a negligible part thereof [1] can be expected to find its way to barge transportation" (p. 31 of the tentative report) is left out of a section entitled "General Influences Affecting All Commerce," which in the revised report appears on pages 16–17.

With reference to the actual movements of commercial traffic on the Missouri River the tentative report said that they have been "negligible." In the revised report this has been changed to "very small."

General PICK. May I ask Mr. Donnelly to identify the two reports?

Mr. MCGRATH. I believe he has.

General PICK. Did anybody sign either one of those reports?

Mr. DONNELLY. These [indicating] were furnished to the committee.

General PICK. Were they signed by anybody?

Mr. DONNELLY. I do not know whether your practice is to sign them or not. These are official documents which were furnished to the committee by your subordinates.

General PICK. Are those complete reports in themselves? Did anybody sign the reports?

Mr. DONNELLY. Is it the practice to sign them?

General PICK. I should think so.

Mr. MCGRATH. You should know something about this, since you supplied them to the committee.

Mr. DONNELLY. These were supplied by subordinates of General Pick to the committee.

Mr. MCGRATH. Then you are responsible.

You will offer those in evidence later, Mr. Donnelly?

Mr. DONNELLY. They will be here for the record. They are too voluminous to print.

General PICK. One is the Thompson report?

Mr. DONNELLY. That is correct.

General PICK. Is that signed by Mr. Thompson?

Mr. DONNELLY. It was prepared by Mr. Thompson.

General PICK. Is it indicated in there that it is his report?

Mr. DONNELLY. It says, "Prepared by Clyde N. Thompson, transportation economist, assistant to staff personnel of the Board."

General PICK. All right, who prepared the other one?

Mr. DONNELLY. That is the mystery.

[1] I. e., of commerce now being transported via other modes of transportation.

Mr. RABAUT. Is that same language in the second one, in the revised one—prepared by Mr. Thompson?

Mr. DONNELLY. No, sir.

General PICK. I think this can probably be cleared up, Mr. Chairman.

Mr. DONNELLY. The information furnished to us by the corps is that the Thompson report was a tentative report. The switches, the changes, and the substitutions were made in what we have been calling the revised report because it is not otherwise distinguishable from the Thompson report.

ESTIMATES OF ANNUAL BENEFITS, SAVINGS IN TRANSPORTATION COSTS

Now, I have here—and I would like to offer it for the record—a document entitled, "Corps of Engineers, Estimates of Annual Benefits, Savings in Transportation Costs." My purpose in offering it is because it takes the year-to-year breakdown from 1961 through 2010.

Mr. RABAUT. Without objection it will be inserted in the record at this point.

(The statement referred to is as follows:)

Corps of Engineers, estimates of annual benefits, savings in transportation costs

Year	Tentative[1]	Revised	Year	Tentative[1]	Revised
1961	$1,370,000	$3,900,000	1988		$15,000,000
1962		4,600,000	1989		15,000,000
1963		5,400,000	1990	$4,700,000	15,000,000
1964		6,300,000	1991		15,000,000
1965	1,825,000	7,300,000	1992		15,000,000
1966		8,300,000	1993		15,000,000
1967		9,300,000	1994		15,000,000
1968		10,300,000	1995	6,380,000	15,000,000
1969		11,200,000	1996		15,000,000
1970	2,280,000	12,000,000	1997		15,000,000
1971		12,600,000	1998		15,000,000
1972		13,100,000	1999		15,000,000
1973		13,500,000	2000	7,300,000	15,000,000
1974		13,850,000	2001		15,000,000
1975	2,740,000	14,250,000	2002		15,000,000
1976		14,500,000	2003		15,000,000
1977		14,700,000	2004		15,000,000
1978		14,850,000	2005	8,660,000	15,000,000
1979		14,950,000	2006		15,000,000
1980	4,100,000	15,000,000	2007		15,000,000
1981		15,000,000	2008		15,000,000
1982		15,000,000	2009		15,000,000
1983		15,000,000	2010	9,140,730	15,000,000
1984		15,000,000			
1985	4,560,000	15,000,000	Average annual benefits 1961–2010	4,900,000	13,398,000
1986		15,000,000			
1987		15,000,000			

[1] Except for the year 2010, figures in this column were calculated by the committee staff to agree with the estimated tonnages shown in the tentative report.

Mr. KERR. Whose report is that?

Mr. DONNELLY. These are the official figures of the Corps of Engineers.

It shows that the Thompson report, which we have identified in the column "Tentative," starts in 1961 with $1,370,000 and by 2010 reaches a figure of $9,140,730.

The revised report, which is shown in this column on this chart [indicating] starts in 1961 at $3,900,000 and in the year 2010 reaches the $15,000,000, which is shown here.

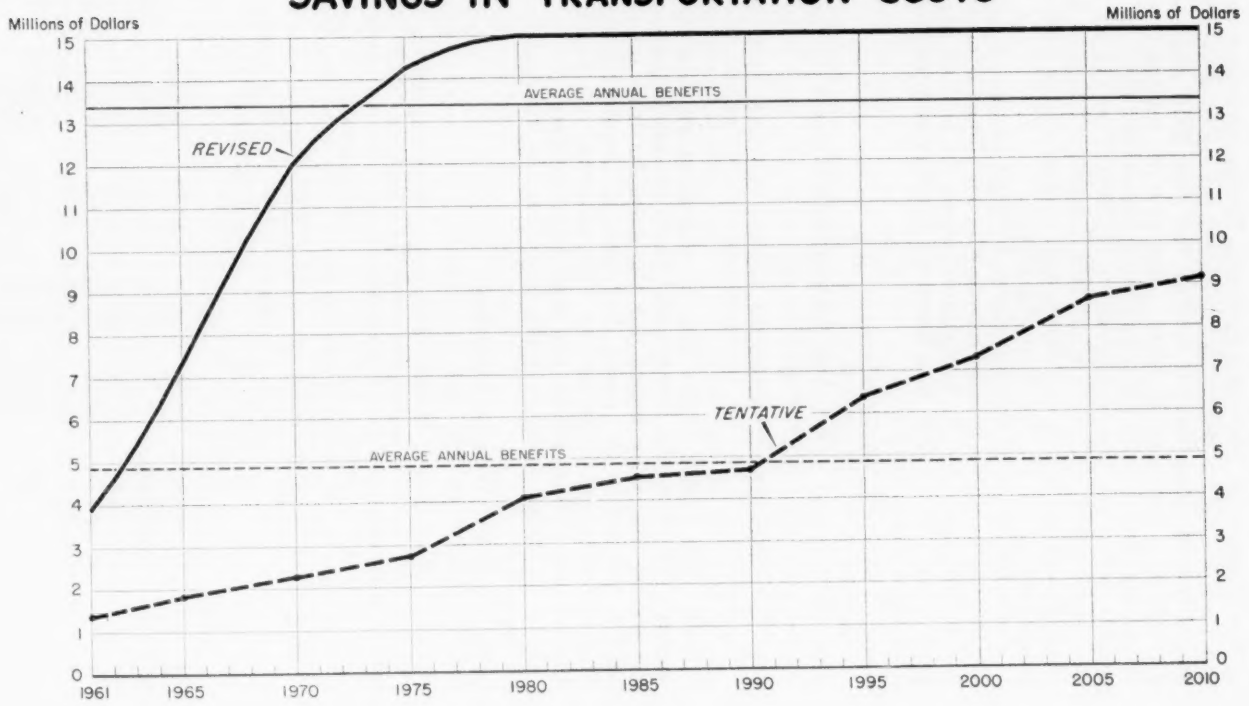
CHANGES IN THOMPSON REPORT BY THE REVISED REPORT

Now, Mr. Chairman, the next chart here shows the difference between the two reports. This chart shows graphically what happened in the change from the Thompson report to the revised report. May it be inserted in the record.?

Mr. RABAUT. Without objection, it will be inserted at this point.

(The chart is as follows:)

CORPS OF ENGINEERS
ESTIMATES OF ANNUAL BENEFITS
SAVINGS IN TRANSPORTATION COSTS



Mr. DONNELLY. Here you have the Thompson report, which starts out in 1961 with a potential predicted saving of about $1,300,000, and it moves along until it reaches the year 2010 and the figure of $9,000,000, a period of 50 years. But now the revised report has cut this period down to 20 years and has increased the figure that Thompson reaches at the end of 50 years of $9,000,000 to $15,000,000 at the end of 20 years. That is what this juggling of figures has accomplished, and you get a very impressive picture of the infirmity of the benefit-cost ratio in the planning report.

The solid line near the top shows average annual benefits of $13,400,000 carried in the revised report, which is almost triple the figure of $4,900,000 shown by the broken line across the bottom portion of the chart. The $4,900,000 was based on tonnage computations by Mr. Thompson in his report.

Mr. KERR. Off the record.

(Discussion off the record.)

Mr. DONNELLY. This chart shows graphically how infirm and uncertain the experts of the corps are.

TONNAGE EXPERIENCE MISSOURI RIVER, KANSAS CITY TO MOUTH, 1935–1951

Now, with regard to the matter of conjecture in predicting what tonnage will be in the future—and these are predictions, gazing into the crystal ball—it is logical for the corps to draw on experience—what happened in the past. We have in the next series of charts what actually has happened on this waterway on which over one-quarter of a billion dollars has been spent to date.

Mr. Chairman, I ask that the next chart be inserted in the record at this point.

Mr. RABAUT. Without objection.

(The chart is as follows:)

TABLE I—*Distribution of Missouri River traffic, in net tons, 1935 to 1951, inclusive*

A. KANSAS CITY TO MOUTH

Year	Total traffic	Materials used in waterway improvements (Government materials)	Commercial traffic				Combined tonnage Inland Waterways Corporation, and other
			Total	Sand (including gravel, stone, clay, and limestone)	Inland Waterways Corporation	Other	
1935	487,587	243,798	243,789	218,923	24,866	0	24,866
1936	375,554	160,416	215,138	167,895	39,129	8,114	47,243
1937	416,474	149,227	267,247	207,049	59,397	801	60,198
1938	497,901	122,567	375,334	258,710	114,248	2,376	116,624
1939	727,861	303,426	424,435	269,496	122,013	32,926	154,939
1940	753,845	404,282	349,563	251,620	66,271	31,672	97,943
1941	764,334	238,208	526,126	373,314	114,106	38,706	152,812
1942	744,916	230,878	514,038	439,681	72,924	1,433	74,357
1943	393,715	99,282	294,433	248,651	35,265	10,517	45,782
1944	322,345	80,586	241,759	213,273	26,116	2,370	28,486
1945	478,338	277,117	201,221	133,260	65,176	2,785	67,961
1946	751,040	223,506	527,534	432,906	93,765	863	94,628
1947	621,172	295,537	325,635	206,197	87,718	31,720	119,438
1948	797,214	545,227	251,987	192,814	40,493	18,680	59,173
1949	917,408	568,644	348,764	250,323	79,643	18,798	98,441
1950	763,133	445,859	317,274	169,790	145,482	2,002	147,484
Total, 1935–50	9,812,837	4,388,560	5,424,277	4,033,902	1,186,612	203,763	1,390,375
1951					57,684		

Source: Annual reports of the Chief of Engineers, U. S. Army, pt. 2 Commercial Statistics, Water-borne Commerce of the United States, for various years. Data furnished by Inland Waterways Corporation.

Mr. DONNELLY. We have here the distribution of Missouri River traffic in net tons from Kansas City to the mouth, year by year, from 1935 to 1951.

The total traffic is shown in the first column, and the total for the 15-year period is 9,812,837 tons. That is a fairly impressive figure. But of that figure half of it is simply materials used by the Corps of Engineers themselves in doing the work. That is, they put some construction machinery on a barge and they would haul some sand and some rock and some piling and some rope, and that accounts for 50 percent of the tonnage that was moved on the river.

Now, we have blocked out in this area over here [indicating column labeled "Total commercial traffic"] traffic that you might regard as commercial traffic. This is what the taxpayers are paying for, that is, when they are paying so much to improve a waterway, and you get here the total for the 15-year period of 5,424,277 tons. But of this figure, as you can see, much of it, or almost all of it, is taken up by sand, gravel, stone, clay, and limestone. It is predominantly sand, 4,033,902 tons, and what that means is this—and I have seen it myself—they go out from shore to the middle of the river and dredge out some sand and haul it back to the shore for use on the shore, and that represents 4,000,000 tons. That is almost 50 percent of the total tonnage which was moved on the river. That leaves us with these two columns here [indicating] where we are actually getting down to the type of traffic that the taxpayer thinks he is paying for.

We have here in these columns a tonnage moved by the Inland Waterways Corporation in the total amount of 1,186,612 tons, which is quite small when compared to the total tonnage of 9,000,000-odd in the first column, but the Inland Waterways Corporation is operating the Federal Barge Lines and they have been reporting operating deficits on the Missouri River, so that the taxpayers are paying to build the navigation on the river and paying to run the barges—subsidizing both ways. Now, the traffic that is moving commercially, and that gets us over into an almost negligible tonnage of 203,763, which is the only thing that you can really attribute to pure commercial traffic. And of this it is not clear from the statistics whether this is all pure commercial traffic, but to give them the best of it, it would fairly appear that this figure of 203,763 tons in the 15-year period is assignable to regular pure commercial traffic.

You get a combination of the tonnage of the Inland Waterways (the Federal Barge Lines) and the pure commercial traffic of 1;390,375 tons for the 15-year period, which compares with the 9,812,837 total tons.

To consider the statistical chart that you have just seen more graphically, we have here a bar chart. This chart is made up to shoe the same statistics which the committee has just seen on the statistical chart that just preceded it. May it be inserted in the record at this point?

Mr. RABAUT. Without objection.

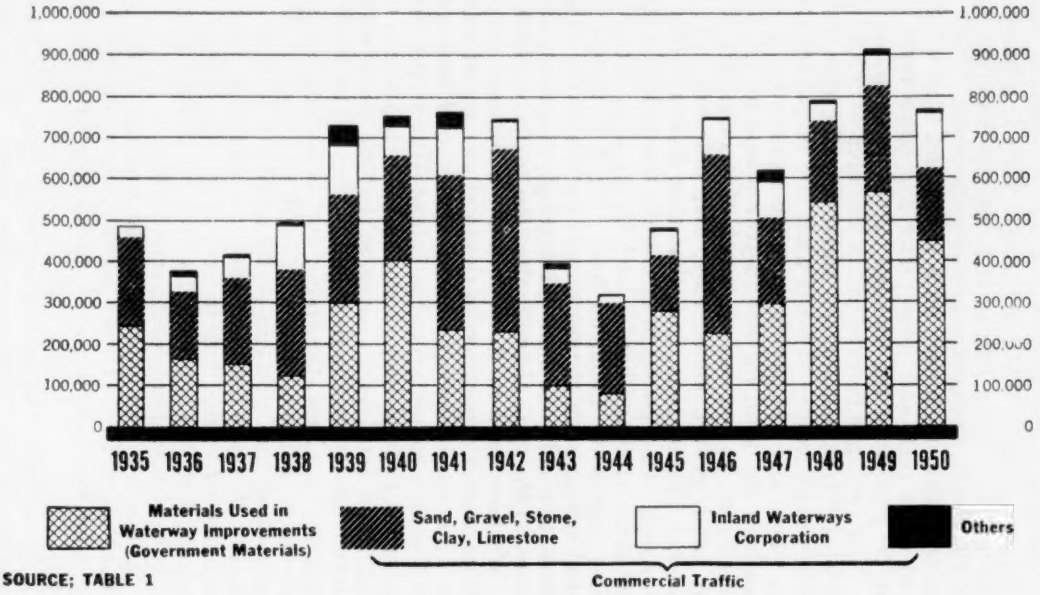
(The chart is as follows:)

CHART 1

DISTRIBUTION OF MISSOURI RIVER TRAFFIC, IN NET TONS

1935 TO 1950, INCLUSIVE

A - KANSAS CITY TO MOUTH



SOURCE; TABLE 1

Mr. DONNELLY. We have in the double cross-hatched area, year by year, the total tonnage carried by the Corps of Engineers themselves improving this waterway—just doing the work. Then in the next portion of the bars, which is a single cross-hatch, we have the sand, gravel, stone, clay, and limestone, and it is predominantly sand, which is a local haul in the river, work from bank to bank, or from the middle of the river to the shore, and that leaves the Inland Waterways in this white area [indicating] toward the top of each of the bars, as you can see, with the small quantities shown, and that is the subsidized traffic. Then you get down to the thing that the taxpayer thinks he is paying for, the solid black at the top of the bars, and that is this little bit of commerce traffic up here [indicating] which in some years does not appear at all, and in other years, as you can see, is negligible.

Mr. DONNELLY. This next chart, Mr. Chairman, is a chart of percentages for these same statistics. May it be inserted?

Mr. RABAUT. Without objection, it will be printed here.

(The chart is as follows:)

TABLE II.—*Distribution of Missouri River traffic, in percent, 1935 to 1950, inclusive*

A. KANSAS CITY TO MOUTH

Year	Total traffic	Materials used in waterway improvements (Government materials)	Commercial traffic				Combined tonnage, Inland Waterways Corporation and other
			Total	Sand (including gravel, stone, clay, and limestone)	Inland Waterways Corporation	Other	
1935	100	50.0	50.0	44.9	5.1	0	5.1
1936	100	42.7	57.3	44.7	10.4	2.2	12.6
1937	100	35.8	64.2	49.7	14.3	.2	14.5
1938	100	24.6	75.4	52.0	23.0	.4	23.4
1939	100	41.7	58.3	37.0	16.8	4.5	21.3
1940	100	53.6	46.4	33.4	8.8	4.2	13.0
1941	100	31.2	68.8	48.8	14.9	5.1	20.0
1942	100	31.0	69.0	59.0	9.8	.2	10.0
1943	100	25.2	74.8	63.2	8.9	2.7	11.6
1944	100	25.0	75.0	66.2	8.1	.7	8.8
1945	100	57.9	42.1	27.9	13.6	.6	14.2
1946	100	29.8	70.2	57.6	12.5	.1	12.6
1947	100	47.6	52.4	33.2	14.1	5.1	19.2
1948	100	68.4	31.6	24.2	5.1	2.3	7.4
1949	100	62.0	38.0	27.3	8.7	2.0	10.7
1950	100	58.4	41.6	22.2	19.1	.3	19.4
Total	100	44.7	55.3	41.1	12.1	2.1	14.2

Source: Table I.

Mr. DONNELLY. Here in the first column we have the identification of 100 percent for the total traffic. Each of these columns of percentages [indicating] are against the total traffic of 100 percent.

We find that for the 15-year period the Corps of Engineers themselves moved materials for their own use to the tune of 44.7 percent; that there was moved sand, gravel, stone, clay, and limestone to the tune of 41.1 percent. Then we get over here to the pay money. The Inland Waterways, 12.1 percent and the other—and this is the pure commercial traffic—2.1 percent. 2.1 percent is actually moved in regular commercial enterprises.

Mr. DONNELLY. Now, we have taken the same percentages you have just looked at and put them on this bar chart. May it be inserted here.

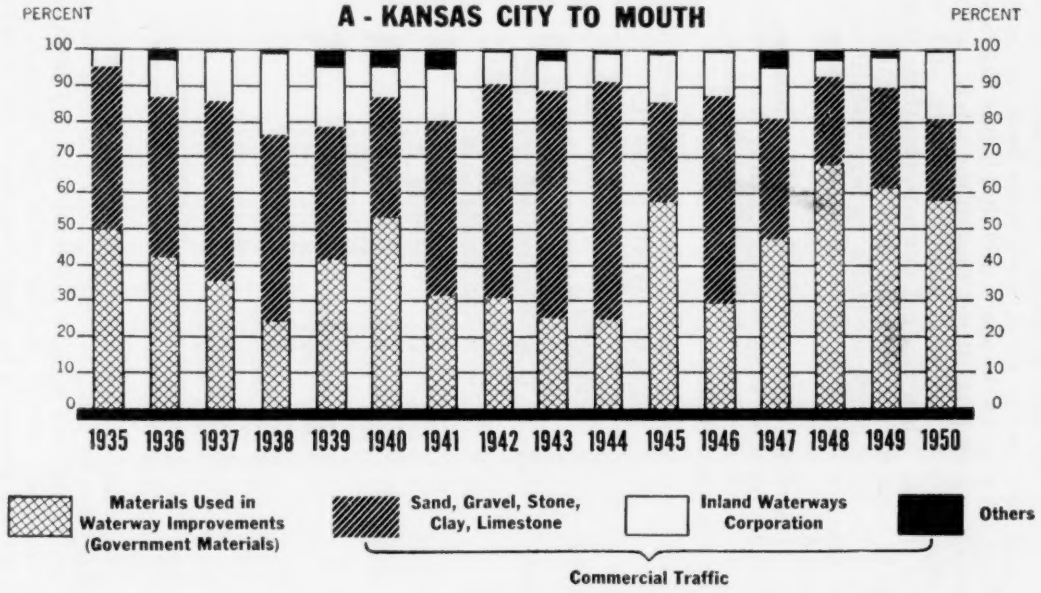
Mr. RABAUT. Without objection.

(The chart is as follows:)

CHART 2

DISTRIBUTION OF MISSOURI RIVER TRAFFIC, IN PERCENT

1935 TO 1950, INCLUSIVE



SOURCE; TABLE 1

Mr. DONNELLY. The 2.1 percent will account for these little black portions of the bars at the top of the chart—the pure commercial traffic.

You can see instantly the quantity of Government materials used in the double crosshatched portion of the chart, and then you can see the tremendous quantities of sand, gravel, stone, clay, and limestone which is hauled, in the single crosshatches.

TONNAGE EXPERIENCE ON MISSOURI RIVER, KANSAS CITY TO SIOUX CITY

Now we move to the second portion of the river, from Kansas City up to Sioux City, and we have this same type of statistical chart that we started with. It shows the statistics that were shown for the lower part of the river.

(The chart is as follows:)

TABLE I.—*Distribution of Missouri River traffic, in net tons, 1935 to 1951, inclusive*

B. KANSAS CITY TO SIOUX CITY

Year	Total traffic	Materials used in waterway improvements (Government materials)	Commercial traffic				Combined tonnage Inland Waterways Corporation, and other
			Total	Sand (including gravel, stone, clay, and limestone)	Inland Waterways Corporation	Other	
1935	1,080,278	972,251	108,027	51,020		57,007	57,007
1936	696,850	681,450	15,400	15,400		0	0
1937	566,706	465,230	101,476	101,476		0	0
1938	608,329	544,166	64,163	64,149		14	14
1939	928,745	803,655	125,090	111,600		13,490	13,490
1940	552,523	450,413	102,110	82,315		19,795	19,795
1941	601,098	478,957	122,141	111,880		10,261	10,261
1942	363,784	271,764	92,020	92,020		0	0
1943	142,247	77,989	64,258	62,924		1,334	1,334
1944	70,707	68,087	2,620	2,454		166	166
1945	385,882	362,384	23,498	22,000		1,498	1,498
1946	276,207	218,545	57,662	56,000	1,532	130	1,662
1947	377,283	208,504	168,779	152,496	5,337	10,946	16,283
1948	810,507	531,545	278,962	254,205	2,377	22,380	24,757
1949	799,705	559,632	240,073	221,478	9,648	8,947	18,595
1950	869,214	687,591	181,623	113,090	18,719	49,814	68,533
Total 1935–50	9,130,065	7,382,163	1,747,902	1,514,507	37,613	195,782	233,395
1951					4,141		

Source: Annual reports of the Chief of Engineers, U. S. Army, pt. 2, Commercial Statistics, Water-Borne Commerce of the United States, for various years. Data furnished by Inland Waterways Corporation.

Mr. DONNELLY. Here, the traffic totals for the 15 years 9,130,065 tons. But now look at the quantity of materials used by the Corps of Engineers for doing their work against the total.

The corps hauled 7,382,163 tons compared with the total of 9,130,065 tons.

The Inland Waterways Corporation did not start to operate until 1946 and has hauled on that stretch of the river only 37,613 tons. This is the Government subsidized barge line.

Then we get into the "Other" column, and find for the 15-year period 195,782 tons—as high in 1950 as 49,814 tons and as low in 1946 as 130 tons. In 1936, 1937, and 1942, nothing moved at all. In 1938, 14 tons moved.

Then we have in the last column the subsidized tonnage through the Inland Waterways Corporation, and "Other," and we get a total of 233,395 tons, which is an infinitesimal part of the total tonnage of 9,130,065 tons.

The next chart graphically and visually shows in bars the effect of this.

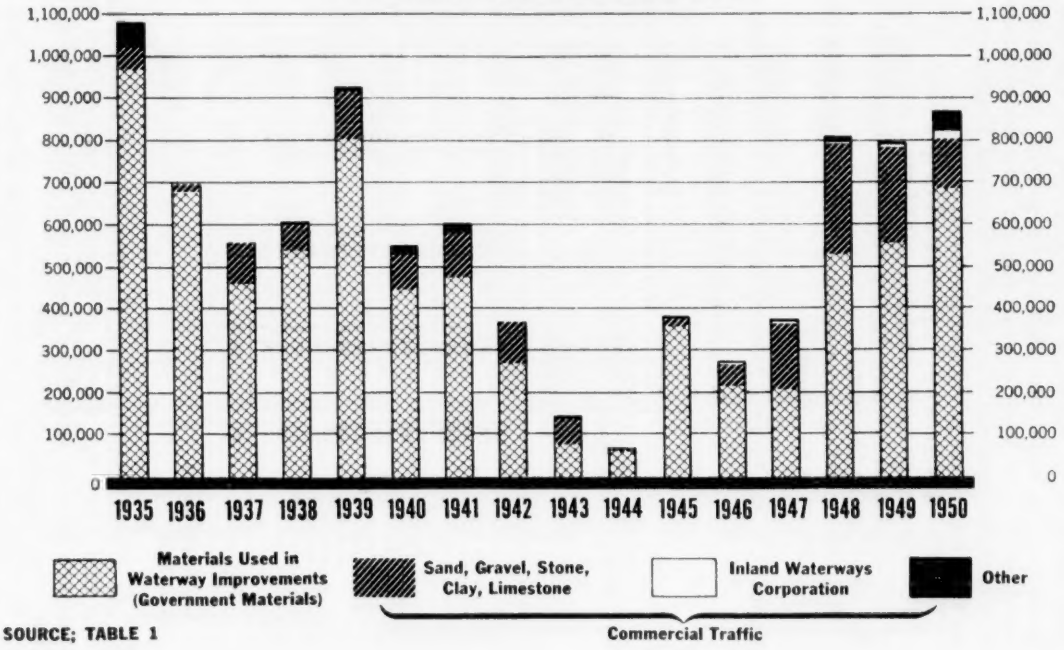
The chart is as follows:

CHART 1

DISTRIBUTION OF MISSOURI RIVER TRAFFIC, IN NET TONS

1935 TO 1951, INCLUSIVE

B - KANSAS CITY TO SIOUX CITY



SOURCE; TABLE 1

Mr. DONNELLY. The pure commercial traffic is the black at the top of the bars. Here [indicating] is the 49,000 tons we saw for 1950. But now look at the other years and you can see how negligible the tonnage was that was moving in purely commercial lines. Predominantly here, year by year, you get your double cross-hatched bars, which is the material used by the Corps of Engineers to do the work on this river—this portion of the river.

The inland waterways is very small in quantity.

There is not as much dredging out of sand and gravel and that sort of material and haulage to the shore as there is in the river from Kansas City to the mouth.

The next chart is the same thing broken down into percentages.

(The chart is as follows:)

TABLE II.—*Distribution of Missouri River traffic, in percent, 1935 to 1950, inclusive*

B. KANSAS CITY TO SIOUX CITY

Year	Total traffic	Materials used in waterway improvements (Government materials)	Commercial traffic				Combined tonnage, Inland Waterways Corporation, and other
			Total	Sand (including gravel, stone, clay, and limestone)	Inland Waterways Corporation	Other	
1935	100	90.0	10.0	4.7	----------	5.3	5.3
1936	100	97.8	2.2	2.2	----------	0	0
1937	100	82.1	17.9	17.9	----------	0	(1)
1938	100	89.5	10.5	10.5	----------	(1)	0
1939	100	86.5	13.5	12.0	----------	1.5	1.5
1940	100	81.5	18.5	14.9	----------	3.6	3.6
1941	100	79.7	20.3	18.6	----------	1.7	1.7
1942	100	74.7	25.3	25.3	----------	0	0
1943	100	54.9	45.1	44.2	----------	.9	.9
1944	100	96.3	3.7	3.5	----------	.2	.2
1945	100	93.9	6.1	5.7	----------	.4	.4
1946	100	79.1	20.9	20.3	0.6	(1)	.6
1947	100	55.3	44.7	40.4	1.4	2.9	4.3
1948	100	65.5	34.5	31.4	.3	2.8	3.1
1949	100	70.0	30.0	27.7	1.2	1.1	2.3
1950	100	79.1	20.9	13.0	2.2	5.7	7.9
Total	100	80.9	19.1	16.6	.4	2.1	2.5

[1] Less than 0.1 percent.

Source: Table I.

Mr. DONNELLY. We have the first column, total traffic, 100 percent. We find that the Corps of Engineers moved 80.9 percent of the tonnage in this stretch of the river. We find sand, gravel, stone, clay, and limestone, 16.6 percent.

We find that the Inland Waterways is moving 0.4 percent, fourtenths of 1 percent, and we find that pure commercial traffic accounted for only 2.1 percent of the total tonnage which was moved on the river.

Here in the next chart we have the same thing broken down into percentages.

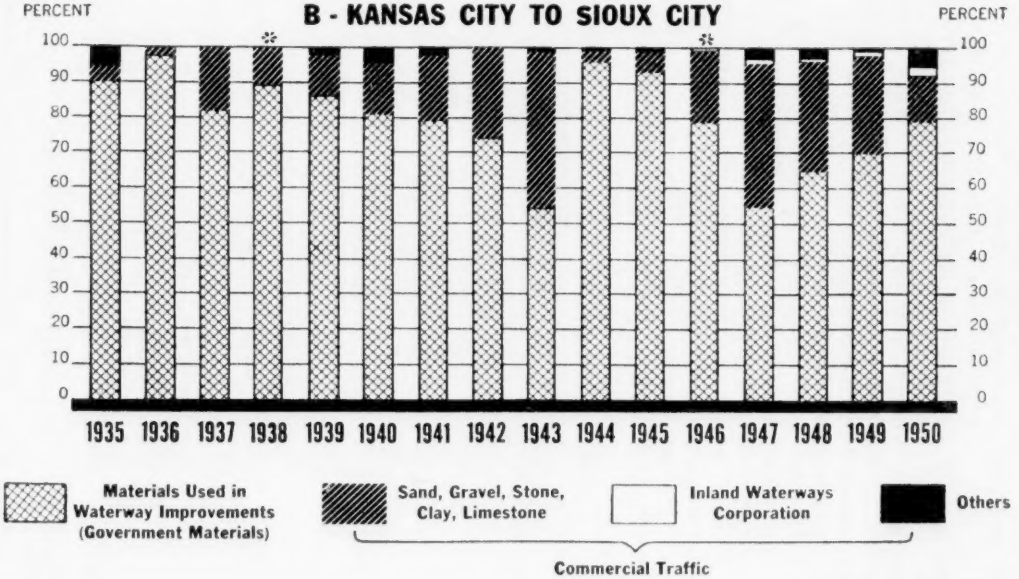
(The chart is as follows:)

CHART 2

DISTRIBUTION OF MISSOURI RIVER TRAFFIC, IN PERCENT

1935 TO 1950, INCLUSIVE

B - KANSAS CITY TO SIOUX CITY



* LESS THAN 0.1 PERCENT

SOURCE; TABLE 1

Mr. DONNELLY. Each bar adds up to 100 percent, and you can see here that we have 1935, Corps of Engineers materials, 90 percent. Here in 1936 it goes to about 97 percent. In 1937 it is about 82 percent. In 1945 it is up to about 93 percent. In 1949 it is 70 percent. In 1950, it is 79 percent, of the total tonnage.

You can see clearly here that there is very little commercial traffic that moves on this section of the river.

METHOD OF COMPUTING FUTURE ECONOMIC BENEFIT COST RATIO

This chart has considerable significance. This is related more to the method of computation used by the Corps of Engineers for the future economic benefit-cost ratio.

(The chart is as follows:)

Navigation benefits, 1935–60, Missouri River, Sioux City to mouth

Year	Estimated benefits		Net tonnage [1]	Sand, including gravel, rock, clay, and limestone	Commercial			Federal barge lines deficit
					Federal barge lines	Other	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1935	$80,000		351,816	269,943	24,866	57,007	81,873	
1936	123,000		230,538	183,295	39,129	8,114	47,243	
1937	152,000		368,723	308,525	59,397	801	60,198	
1938	295,000		439,497	323,059	114,248	2,190	116,438	
1939	312,000		549,525	381,096	122,013	46,416	168,429	
1940	169,000		451,673	333,935	66,271	51,467	117,738	
1941	304,000		648,267	485,194	114,106	48,967	163,073	
1942	193,000		606,058	531,701	72,924	1,433	74,357	
1943	110,000		358,691	311,575	35,265	11,851	47,116	
1944	79,000		244,379	215,727	26,116	2,536	28,652	
1945	175,000		224,719	155,260	65,176	4,283	69,459	
1946	248,000		585,196	488,906	95,297	993	96,290	
1947	235,000		494,414	358,693	93,055	42,666	135,721	[2] $110,178
1948	107,000		530,949	447,019	42,870	41,060	83,930	109,127
1949	216,000		588,837	471,801	89,291	27,745	117,036	196,396
1950	250,000		498,897	282,880	164,201	51,816	216,017	243,987
1951	400,000	($375,000)			61,825			156,951
Total	3,048,000							
1952	600,000	(500,000)						
1953	800,000	(625,000)						
1954	1,050,000	(750,000)						
1955	1,300,000	(875,000)						
1956	1,600,000	(1,000,000)						
1957	1,950,000	(1,125,000)						
1958	2,350,000	(1,250,000)						
1959	2,800,000	(1,375,000)						
1960	3,300,000	(1,507,000)						
Total	19,198,000							

[1] Less material used in connection with river improvement work.
[2] 5 months.

NOTE.—Columns 3 through 7 show tonnage including some duplication between the upper and lower section of the river.

Mr. DONNELLY. Now, we have here figures which the corps says, through their expert judgment, were the transportation benefits on the river for the years 1935 to 1951, and in column (1) they get up to $400,000 in benefits in 1951.

The tentative report got up to $375,000 only, and that is in column (2) for the year 1951.

This is where we get the interplay of the corps' supposed need to build up fast and big, from a small beginning.

Here the disparity between the tentative report and the master minds of the corps is only $25,000 [indicating columns (1) and (2) for 1951]. When they finally reached the year 1960, which is 10 years later, the disparity is $1,507,000, the figure in the tentative report, against the figure in the corps' revised report of $3,300,000. The reason that the corps jumped up so fast was that in order to get into that 20-year cycle instead of the 50-year cycle the corps wanted to tee off in 1961 with a figure of $3,900,000, and the tentative report was moving too slowly, because it did not get anywhere near $3,900,000 in 1961. That is one of the features of it.

The column (1) figures are found in the revised report, that is the one with the switched pages, in appendix III at pages 73 and 74, and the figures here in column (2), which are the tentative report figures found in the tentative report, appendix III, at pages 75 to 76.

Mr. McGrath. By "these figures" you mean the figures in parentheses in the chart.

Mr. Donnelly. Exactly, and those are the figures in column (2).

OPERATING LOSSES OF FEDERAL BARGE LINES

Mr. Donnelly. This chart also shows the operating deficit of the Inland Waterways Corporation in column (8)—and they operate the Federal Barge Lines—here in a 5-months' period in 1947 of $110,178. In 1948, about the same. In 1949, $196,396. In 1950, almost a quarter of a million dollars, and 1951, $156, 951.

Here [indicating] is a very interesting thing. If you will look at this figure here, $243,987 (column (8)) for 1950, this is money paid by the Government to subsidize the Federal Barge Lines to run on the river.

Mr. Kerr. Who was Thompson working for?

Mr. Donnelly. The Board of Engineers for Rivers and Harbors.

Now, let us take a look at this operating loss of the Federal Barge Lines for 1950, $243,987. For this same year, the Corps of Engineers says (in column 1), "Yes, but we have saved in transportation benefits amounting to $250,000." The similarity between the two figures is remarkable. In other words, the loss to Federal Barge Lines almost completely destroys the transportation savings computed by the Corps.

Mr. Rabaut. The barge lines, though, are under no control of the Engineers?

Mr. Donnelly. No; the Federal Barge Lines is a pilot operation subsidized by the taxpayers to try to use the river for navigation.

In 1948 we have that striking similarity again. The Federal Barge Lines lost on the Missouri River $109,127 and the Corps of Engineers reported benefits, transportation benefits, of $107,000, so the operating loss to the Federal Barge Lines completely destroys the transportation benefits or savings computed by the Corps.

MISSOURI RIVER MAINTENANCE COSTS, 1935–51

Mr. DONNELLY. The next chart in sequence shows how much it costs per ton to maintain the waterway, and we have here, to lead up to the maintenance cost per ton, the maintenance figures which have been spent on the river from Kansas City to the mouth for the period 1935 to 1951. You can see the expenditures year by year for maintenance on the river.

I offer for the record the statistical table showing these costs year by year from 1935 to 1951, and a bar chart showing maintenance costs, tonnage, and maintenance cost per ton, from Kansas City to the mouth of the river.

Mr. RABAUT. Without objection, the statistical table and the bar charts will be inserted at this point.

(The charts face this page, and the table is as follows:)

Missouri River maintenance costs, 1935 to 1951, inclusive

A. KANSAS CITY TO MOUTH

Year [1]	Maintenance	Tonnage [2]	Maintenance cost per ton
1935	$814,479	24,866	$32.7
1936	1,619,419	47,243	34.2
1937	1,745,205	60,198	29.0
1938	1,428,193	116,424	12.25
1939	1,003,723	154,939	6.48
1940	1,261,694	97,943	12.89
1941	1,505,241	152,812	9.85
1942	1,348,492	74,357	18.11
1943	1,582,663	45,782	34.55
1944	1,409,550	28,486	49.4
1945	1,777,466	67,961	26.1
1946	2,540,324	94,628	26.8
1947	1,651,572	119,438	13.82
1948	2,714,840	59,173	45.8
1949	2,946,603	98,441	29.95
1950	2,833,894	147,484	19.20
1951	2,041,509	----	----
Total	30,225,867	----	----

B. KANSAS CITY TO SIOUX CITY

1935	$82,307	[3] 57,007	$1.44
1936	227,030	0	----
1937	248,256	0	----
1938	370,200	14	26,400
1939	647,375	13,490	48
1940	445,355	19,795	22.5
1941	576,455	10,261	56.1
1942	702,153	0	----
1943	1,083,340	1,334	812
1944	1,390,542	166	8,380
1945	1,748,374	1,498	1,165
1946	2,796,176	1,662	1,680
1947	1,204,705	16,283	740
1948	2,697,305	24,757	109
1949	2,963,031	18,595	159.4
1950	5,503,577	68,533	80.4
1951	3,111,640	----	----
Total	25,527,821	----	----

[1] Fiscal year for maintenance and calendar year for tonnage.
[2] Excludes materials used in waterway improvements (Government materials), sand and including gravel, stone, clay, and limestone.
[3] Based on Corps of Engineers' estimate.

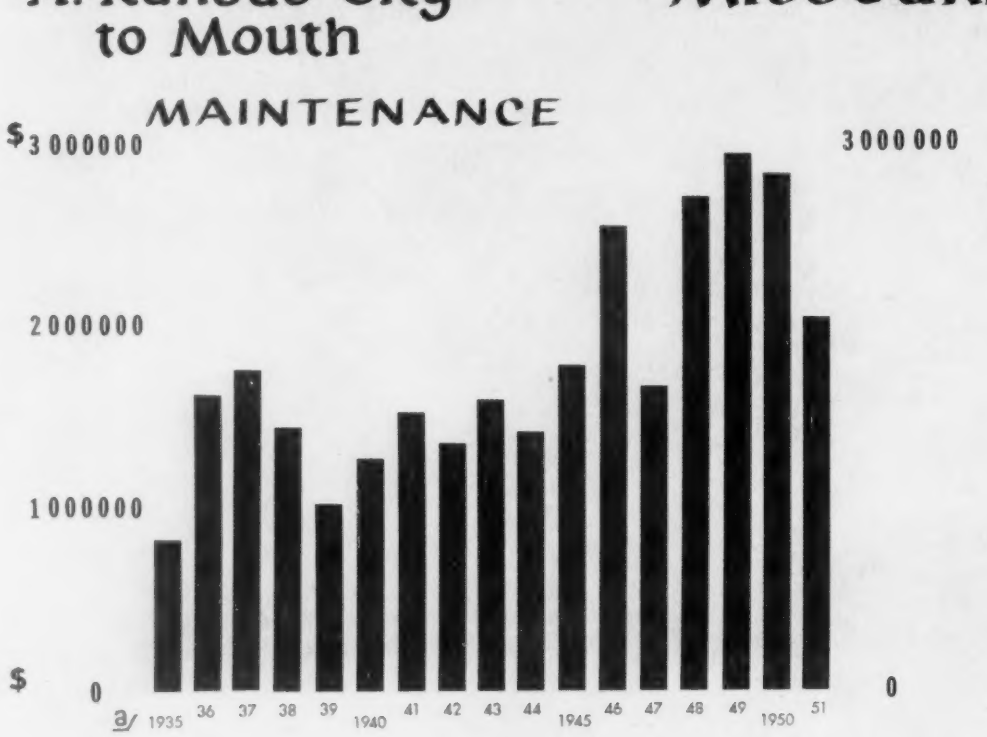
Source: Annual Reports of the Chief of Engineers, U. S. Army, for various years. Also table I.

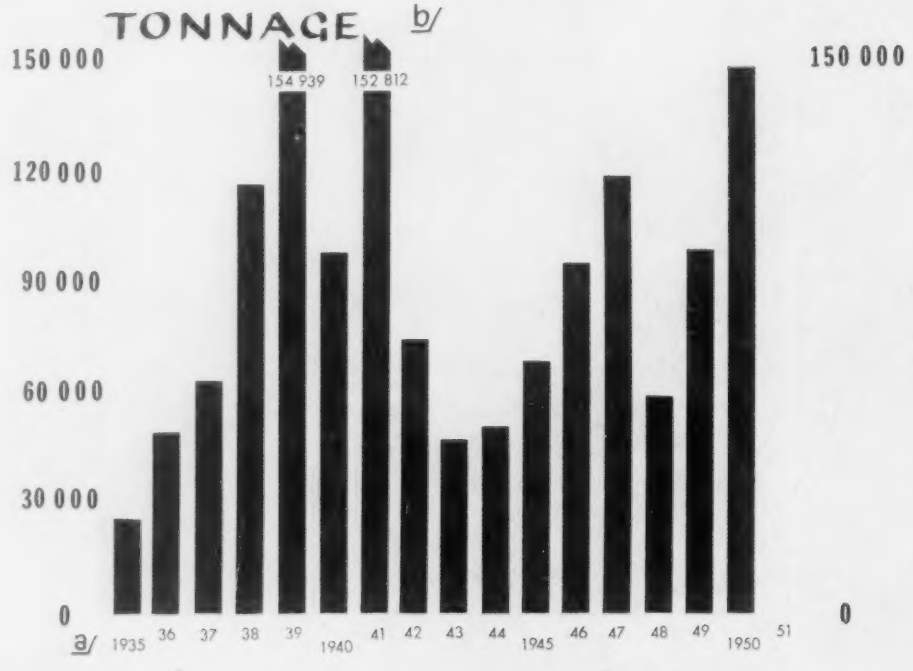
A. Kansas City to Mouth

MISSOURI RIVE 193

a/

b/

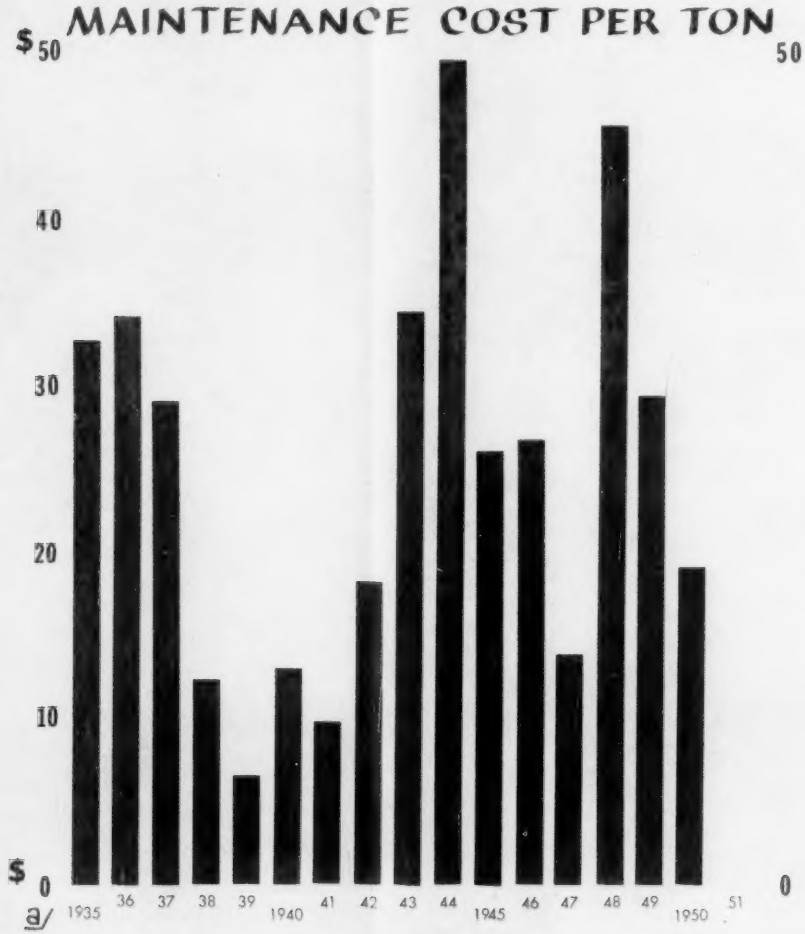




RIVER MAINTENANCE COSTS 1935 to 1951, Inclusive

a/ Fiscal year for maintenance & calendar year for tonnage —

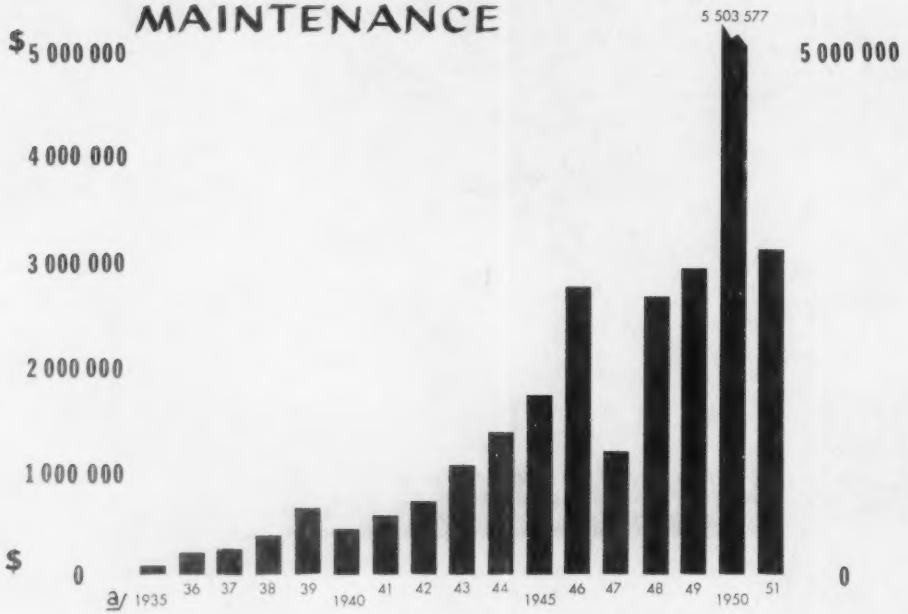
b/ Excludes materials used in waterway improvements (government materials), sand, gravel, stone, clay & limestone

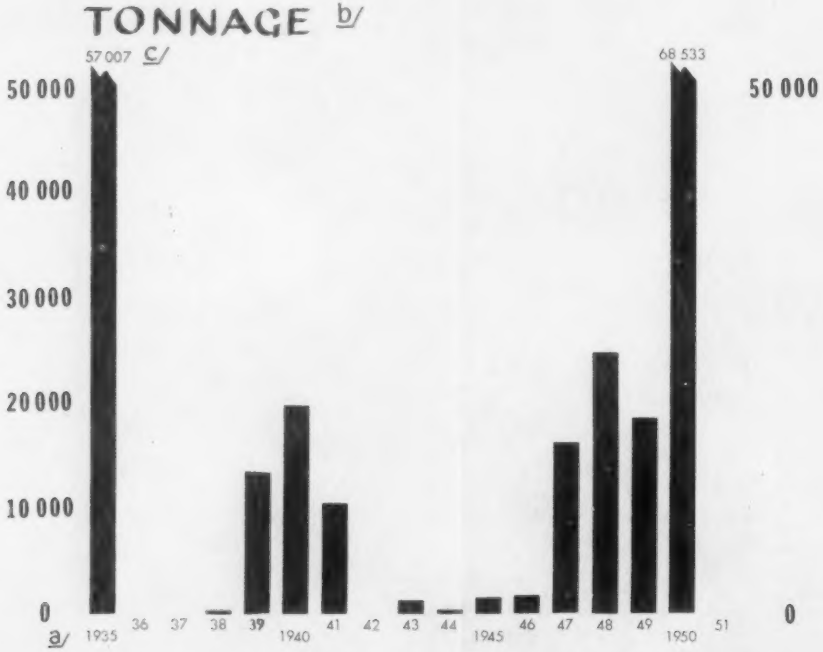


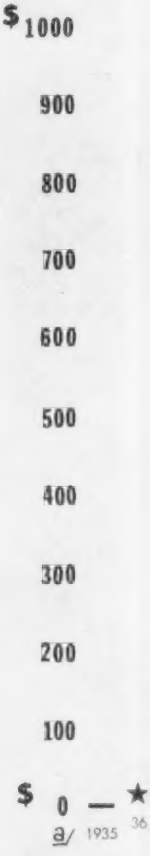
MISSOURI RIVER M
1935 to

a/ Fiscal yea
year f
b/ Excludes
improveme
gravel,
c/ Estimated

B. Kansas City to Sioux City







R MAINTENANCE COSTS
5 to 1951 Inclusive

al year for maintenance ε calendar
ear for tonnage
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provements (government materials), sand,
avel, stone, clay, ε limestone
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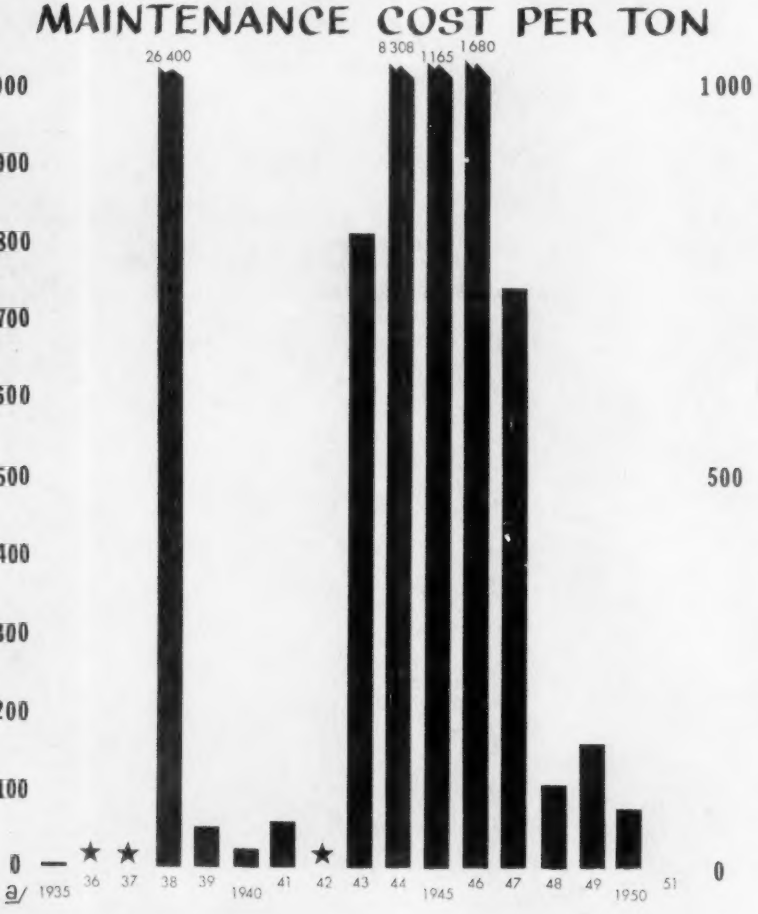


★ No tonnage moved

Mr. DONNELLY. We have over here [indicating] the tonnage that was moved during the same period of time 1935 to 1951, and the two charts, the maintenance chart and the tonnage chart, are translated into the maintenance cost per ton. You will find that in 1950 the Government was spending in maintenance $19 for every ton that was moved. In 1949 the Government was spending in the way of maintenance, $30 for every ton that was moved. In 1948 the Government was spending $46 in maintenance for every ton of traffic that was moved. In 1944 the Government was spending $49 in maintenance charges for every ton of traffic which was moved on that river.

Now, in computing these figures, as shown by footnote b for tonnage, there has been excluded the materials used by the Corps of Engineers themselves, the materials that they hauled to work with, and also the sand, gravel, stone, clay and limestone, which is not a haul proposition at all, but which is just from the bank out to the middle of the river to a bar and back to the shore.

Mr. RABAUT. What tonnage does that 150,000 refer to?

Mr. DONNELLY. That 150,000 was the actual tonnage moved.

Mr. RABAUT. All tonnage that moved?

Mr. DONNELLY. Actual tonnage that moved, and this figure is obtained from the statistics of the Corps of Engineers.

Mr. DONNELLY. Now, we have the same statistics on this bar chart for the portion of the river from Kansas City to Sioux City, which I offer for the record.

Mr. RABAUT. Without objection, it will be printed at this point.

(The chart faces this page.)

Mr. DONNELLY. We have here the maintenance spent each year, year by year, from 1935 to 1951, shown in the first chart in the upper left-hand portion of the graph. Here we have the tonnage which moved year by year from 1935 to 1951.

My understanding from the economists is that this figure for 1935 of 57,007 tons was a constructed figure and not an actual figure. It was just a guess, but you can look at that and see the divergence between this figure in 1936, which is zero; 1937, which is zero; 1938, which was de minimis, and then in 1939 it got up to about 12,000 tons.

I begin to wonder how they can find 57,000 in one year and nothing in the next year and the next year.

Now, we get into the item of maintenance cost per ton and we find that it costs so much per ton in certain years that it completely breaks out and off the chart; that for 1938 for every ton of traffic moved it cost $26,400 in maintenance cost. The limitations of the chart is also exceeded in 1944, when it cost $8,308 per ton in maintenance cost. In 1945, for each ton, $1,165. In 1946, $1,680.

Then we get to 1948, and it costs about $103 per ton for maintenance for every ton of traffic that is moved on the river from Kansas City to Sioux City.

In 1949 the cost is up to about $165, to $170 per ton.

In 1950 the cost is approximately $85 per ton. The Government is paying a fat subsidy for every shipper who ships anything on that river.

Erosion Control Benefits

Mr. Donnelly. Now, we move to the next phase of the benefit-cost ratio, and this has to do with the erosion-control benefits. You will recall we had in the first chart navigation benefits. We have just discussed those.

Then, we had a figure for erosion-control benefits, $19,877,000.

Mr. Chairman, I offer for the record at this point the next chart.

Mr. Rabaut. Without objection, it will be printed here.

(The chart is as follows:)

Erosion-control benefits

	Total benefits to date, 1911–50	Future average annual, 1951–2010	Average annual, 1911–2010
Meander belt:			
Corps of Engineers [1]	$63,300,000	$6,450,000	$4,497,000
Staff	37,980,000	3,870,000	2,698,200
Area landward of meander belt:			
Corps of Engineers [1]	46,900,000	3,700,000	2,689,000
Staff	29,140,000	2,220,000	1,613,400
Accretion area:			
Corps of Engineers [1]	9,570,000	1,352,000	907,000
Staff	5,742,000	811,000	544,200
Urban area:			
Corps of Engineers [1]	94,458,000	8,082,000	5,794,000
Staff	94,458,000	8,082,000	5,794,000
Total:			
Corps of Engineers [1]	214,228,000	[2] 19,584,000	13,887,000
Staff	167,320,000	14,983,000	10,649,800

[1] Source: Report on Missouri River, channel stabilization and navigation project, Corps of Engineers, Missouri River Division, July 28, 1950.

[2] $19,877,000 for the period 1961–2010 was used by corps in computing benefit-cost ratio.

Mr. Donnelly. In this master chart on erosion-control benefits, this figure of $19,584,000 is comparable, for all practical purposes, with the figure of $19,877,000. The difference is that the figure of $19,584,000 is over a 60-year period, whereas the other is over a 50-year period, from 1961 to 2010.

Then in the first chart that you saw, the figure for the 50-year period, from 1961 to 2010, and that means this figure of $19,877,000 in that chart, covers what is shown in this chart of $19,584,000, but it has an additional 10-year period.

General Pick. May I see the chart that you just put down, Mr. Donnelly? What does that chart mean?

Mr. Donnelly. It shows the benefit-cost ratio.

General Pick. From Sioux City to the mouth?

Mr. Donnelly. That shows the benefit cost ratio from Sioux City to the mouth, General Pick, which is taken directly from your planning report, page 1.

General Pick. I just did not know what was on it. That is all right, sir.

DIVERGENCE BETWEEN CORPS OF ENGINEERS AND COMMITTEE ON ESTIMATE OF FUTURE AVERAGE ANNUAL BENEFITS

Mr. DONNELLY. Now, in the matter of erosion-control benefits the staff has not had ample time to explore all the facets of the problem, but we have made some analysis. We have in the third column here from the bottom, under "Future average annual," the staff figure of $14,983,000, which is $5,600,000 less than the corps who came up with $19,584,000, so you can see that there is a wide divergence at this point between the Corps of Engineers and the computations made by the staff of this committee to date.

General PICK. What is that, Mr. Donnelly—future average annual what?

Mr. DONNELLY. Benefits in dollars.

General PICK. For what—erosion control?

Mr. DONNELLY. Erosion-control benefits. That is the figure that is comparable for all practical purposes with the figure you used in your planning report for erosion-control benefits of $19,877,000.

Mr. RABAUT. Only for a difference of 10 years?

Mr. DONNELLY. That is correct. We have a divergence of $5,000,000 between the staff and the corps as a result of the staff work to date.

Now, I would like to identify the figures here. In the first column we have total benefits to date, 1911–50. The corps started work on this project in 1912, under the 1912 River and Harbor Act—so the period 1911–50 is an actual period. In that period of time the Corps of Engineers in the revised report has found a benefit of $63,300,000 in the meander belt.

Now, I would like to describe briefly what the three belts are. First, there is the meander belt, then, second, the area landward of the meander belt, and, third, the accretion area. We start with the meander belt. The river meanders as it goes down the flood plain between the two bluffs that God and nature created hundreds of centuries ago. The river will meander to the extent of 1,000 feet to 1 mile with an average meander of 3,200 feet. So that is what you call the meander belt. That is the portion of the banks which are most vulnerable to erosion by the river in just changing its course.

Now, the area landward of the meander belt is the area between the limits of the meander belt and the bluffs themselves, and it is an area of 3½ miles. That land is a little safer than the land in the meander belt. That is treated differently in the evaluation.

The accretion area is caused this way: The river in going down carries a lot of silt and it will build up land here and land there. It takes a number of years to do it.

Mr. RABAUT. It takes it from one side and puts it on the other?

Mr. DONNELLY. That is exactly right. And that accretion land is alluvial soil. It is fertile and trees will grow up on it in a short time. The report shows that actually over a period of 50 years there is as much taken from one place as is put into another. But for our purposes, and for the purposes of the Corps of Engineers in this computation, we have treated this accretion area separately.

Then you have your urban areas, that is, your towns and other communities which may be subject to flood. You get into how much money it is going to cost by way of loss from time to time.

Over this period from 1911 to 1950 the Corps of Engineers found the total benefits for erosion control of $214,228,000. The staff at this point has reached the figure of $167,320,000. Now, the staff has not gone through this thing to the end. In the case of the urban area the staff has just accepted the corps' figures—not that we are satisfied with them—but we have not had the opportunity to probe into the problem.

On the accretion area, in the area landward of the meander belt, and in the meander belt, we also accepted the acreage that the Corps of Engineers used because we have not had an opportunity to go out and compute the acreage.

Actually in the accretion area the corps has used the figure of 135,400 acres. In the meander belt the corps has used the figure of 605,900 acres. In the area landward of the meander belt the corps has used the figure of 740,000 acres.

The corps did not, of course, use any acreage for the urban area, as we would expect.

What the corps has done in getting at these benefits and what the staff has done is this—you take the number of acres, you figure out what is going to be grown on the acres—wheat, corn, oats, alfalfa, or whatever it is—and you figure out what your yield per acre will be and then you figure out what the price for the crop will be year by year, and then by going through those computations you get the value per acre. After you get the value per acre you figure only 45 percent on it subject to the flood damage, so you take only 45 percent of the value. That is the basis for the figures shown here throughout.

Mr. RABAUT. Where do you get that 45 percent?

Mr. DONNELLY. The corps has used that. The corps has decided in their expert judgment that 45 percent is the figure to use. The Corps of Engineers estimate 70 percent for cultivation and a flood loss of 35 to 40 percent, equaling a net of 45 percent.

Mr. KERR. Has anything beneficial ever resulted from the erosion control?

Mr. DONNELLY. There is no question but that benefits have resulted. We actually compute and the committee staff says that they have been $167,000,000 over this period of time, but what we are doing is trying to find out if the engineers have been too high and too optimistic in their computation of the same thing because of the effect on the benefit-cost ratio.

Mr. KERR. You cannot tell what the difference is until the work is really done, as a matter of fact?

Mr. DONNELLY. This is the figure for the actual time from 1911 to 1950 [indicating the first column on the chart]. This is actual. This is known. This is not crystal-ball gazing. You can only predict the future by drawing upon past experience, but in drawing on past experience we are in wide disparity with the expert judgment of the Corps of Engineers in making those calculations.

VALUE-PER-ACRE BASIS USED BY CORPS OF ENGINEERS

Mr. DONNELLY. We have here in this next chart a very important bit of information reflected. Let me give you the conclusions first, and I will go back and analyze it and build it up.

(The chart is as follows:)

Net return on composite acre in Missouri River Valley

Crop	Percent of cultivated area	Yield per acre	Price 1911–50	Potential gross return per acre	Owner's share [1]	Owner's return	45 percent [2]
Corn	41.1	57.7 bushels	$0.70	$16.57	2/5	$6.64	$2.99
Wheat	27.2	31.2 bushels	1.00	8.49	1/3	2.83	1.27
Oats	7.7	35 bushels	.40	1.08	1/3	.36	.16
Barley	1.7	36.7 bushels	.60	.37	1/3	.12	.05
Rye	3.4	20.2 bushels	.65	.58	1/3	.19	.09
Other grains	1.2	15 bushels	1.25	.23	1/3	.08	.04
Alfalfa	7.2	4.7 tons	9.25	3.13	1/2	1.57	.71
Clover	3.4	2 tons	9.25	.63	1/2	.31	.14
Other forage	1.2	2 tons	9.25	.22	1/2	.11	.05
Pasture	3.4		10.00	.34	$5 per acre	.17	.08
Potatoes	.9	200 bushels	1.00	1.80	$5 per acre	.05	.02
Truck crops	1.6		350.00	5.60	$5 per acre	.08	.04
	100.0			39.04		12.51	5.64
Less:							
Real estate taxes							.82
Improvement repairs							.87
Miscellaneous expenses							.11
							1.80
Net return							3.84
Corps of Engineers used for meander belt							15.00
Corps of Engineers used in accretion area							8.50

[1] Staff data, Corps of Engineers used 1/3 throughout.
[2] Corps of Engineers estimate 70 percent in cultivation and flood loss of 35–40 percent, equaling 45 percent net.

Mr. DONNELLY. In figuring the value per acre to assign to the erosion benefits the Corps of Engineers have used figures shown at the bottom of this table, and in the accretion area they have used the figure of $8.50 per acre. That is the lowest they use, and that is why we put this one in the chart. In the meander belt they have used $15 an acre. The corps used both of these figures in their computation of benefits from 1911 to 1950.

In going through these matters, we have found that the figure is actually $3.84 an acre in benefits, over-all for all belts.

Mr. RABAUT. How do you arrive at that?

Mr. DONNELLY. Right on this chart, sir. In the first column we take the percent of cultivated area, and I might say that the first column and the second column are Corps of Engineers figures on page 58 of appendix III of the revised report. Here we find corn in cultivation, 41.1 percent; wheat, 27.2 percent; oats, 7.7 percent.

Then, in the next column we have accepted the corps figures of the yield per acre, 57.7 bushels of corn; 31.2 bushels of wheat, and 35 bushels of oats per acre.

The next column is the one where you are going to find that the corps has exceeded reality, and substantially. The price for the period 1911 to 1950 is shown here as 70 cents for corn for the Missouri River Valley. This figure is taken from the Bureau of Agricultural Economics. Do you know what figure the corps used? $1.30! The actual historical price for corn for this period of time is 70 cents and the corps used $1.30 in computing benefits from 1911 to 1950.

It is just like the Tennessee-Tombigbee picture. You remember when they had that stretch of water from New Orleans to Mobile where the shippers said we are doing it for 75 cents to a dollar, and

the Corps of Engineers put in the table 32 cents in order to show a lower water cost? Do you remember that last year? The corps just does not have to bother with reality if it suits their purpose to do otherwise.

We find here in this column (price 1911–50) the actual figures of the Bureau of Agricultural Economics for the various farm crops.

In the next column we get the potential gross return per acre. That is by taking the yield per acre, with the price per bushel, or per ton, as when you get down into alfalfa, clover, and this forage pasture, and then you get the potential gross return per acre, which comes out to $39.04.

In this next column we get the owner's share. The Corps of Engineers has artibrarily said that the owner is going to get 50 percent as his share in each case. Actually the Bureau of Agricultural Economics and other experts feel that the owner's share will vary, depending upon the risk involved in farming particular portions of land, and they use two-fifths in the case of corn, one-third for wheat, oats, barley, rye, and other grains, and then they get up to one-half in alfalfa, clover, and other forage grains.

The owner's return is shown in the next to the last column and comes to $12.51 per acre over-all for all of these crops, and with the 45-percent factor, the committee staff comes out with $5.64. You take from the $5.64, the owner's real estate taxes, improvement, repairs, and miscellaneous expenses, and you get $1.80. That gives him a net of $3.84. That is for the Missouri River Valley.

In the accretion area, where the river washes away, the corps comes out with $8.50 and in the meander belt they use the figure of $15.

Now, when they do this kind of finagling, it is easy to see how they can compress the ultimate realization from 50 years to 20 years. They did that on the navigation benefits, and here is the figure in the computation of erosion control benefits.

Mr. DAVIS. Are those real-estate figures, and figures for taxes and improvements and repairs, Corps of Engineers figures? What is the source of those figures?

Mr. DONNELLY. In their report they did not consider that. We have gotten those from experts in the field, Bureau of Agricultural Economics' and other experts.

AVERAGE PRICES RECEIVED BY FARMERS

Mr. DONNELLY. Now we have the next exhibit, which I would like to offer for the record at this point, if I may. It is entitled "Bureau of Agricultural Economics, Weighted Season Average State Prices Received by Farmers."

Mr. RABAUT. Without objection, it may be inserted in the record at this point.

(The chart is as follows:)

Bureau of Agricultural Economics weighted season average State prices received by farmers

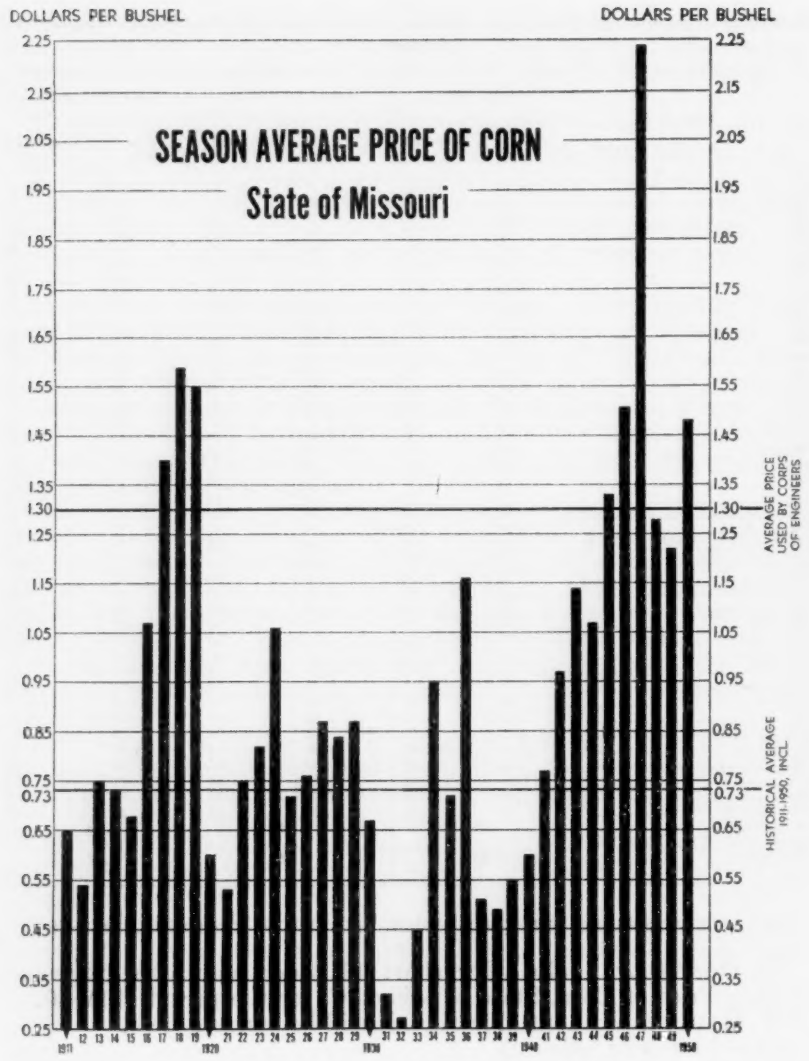
Year	Corn per bushel		Wheat per bushel		Oats per bushel	
	Iowa	Missouri	Iowa	Missouri	Iowa	Missouri
1911	$0.60	$0.65	$0.87	$0.84	$0.41	$0.45
1912	.44	.54	.82	.93	.29	.36
1913	.61	.75	.78	.81	.35	.42
1914	.64	.73	.94	.93	.41	.47
1915	.63	.68	.95	.03	.36	.42
1916	1.15	1.07	1.38	1.43	.46	.46
1917	1.30	1.40	2.03	2.06	.66	.66
1918	1.40	1.59	2.01	2.06	.63	.69
1919	1.34	1.55	2.03	2.13	.70	.79
1920	.47	.60	1.84	2.04	.45	.65
1921	.41	.53	.99	1.06	.25	.23
1922	.64	.75	.94	.99	.33	.45
1923	.75	.82	.89	.93	.36	.44
1924	1.01	1.06	1.20	1.28	.44	.53
1925	.60	.72	1.39	1.49	.34	.45
1926	.69	.76	1.23	1.25	.36	.44
1927	.83	.87	1.24	1.29	.45	.51
1928	.76	.84	1.02	1.25	.36	.49
1929	.73	.87	1.07	1.12	.38	.47
1930	.52	.67	.71	.75	.29	.36
1931	.28	.32	.40	.40	.19	.22
1932	.30	.27	.38	.41	.13	.18
1933	.50	.45	.78	.82	.29	.34
1934	.79	.95	.88	.84	.45	.48
1935	.62	.72	.85	.84	.22	.34
1936	1.07	1.16	1.05	1.05	.42	.51
1937	.44	.51	1.02	.95	.25	.32
1938	.46	.49	.58	.57	.19	.23
1939	.53	.55	.66	.66	.28	.29
1940	.57	.60	.70	.69	.29	.31
1941	.72	.77	.97	1.00	.40	.39
1942	.86	.97	1.13	1.19	.49	.50
1943	.99	1.14	1.34	1.44	.69	.74
1944	.98	1.07	1.43	1.46	.69	.78
1945	1.23	1.33	1.51	1.53	.66	.74
1946	1.53	1.51	1.93	1.96	.77	.83
1947	2.15	2.24	2.26	2.23	1.07	1.04
1948	1.31	1.28	2.03	2.03	.69	.78
1949	1.27	1.22	1.89	1.82	.64	.67
1950	1.48	1.48	2.03	2.00	.79	.79
State average, 1911–51	.67	.73	.96	.99	.36	.40
Iowa-Missouri	.70		.98		.38	
Prices used by Corps of Engineers	1.30		2.02		.77	

SEASON AVERAGE PRICE OF CORN, STATE OF MISSOURI, 1911–50

Mr. DONNELLY. I also offer chart 18 which shows the "Season Average Price of Corn, State of Missouri" for the period 1911–50.

Mr. RABAUT. Without objection, it will be inserted here.

(The chart is as follows:)


DOLLARS PER BUSHEL
DOLLARS PER BUSHEL
SEASON AVERAGE PRICE OF CORN
State of Missouri
2.25
2.15
2.05
1.95
1.85
1.75
1.65
1.55
1.45
1.35
1.30
1.25
1.15
1.05
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0.85
0.75
0.73
0.65
0.55
0.45
0.35
0.25
AVERAGE PRICE USED BY CORPS OF ENGINEERS
HISTORICAL AVERAGE 1911-1950, INCL.
11 12 13 14 15 16 17 18 19 1920 21 22 23 24 25 26 27 28 29 1930 31 32 33 34 35 36 37 38 39 1940 41 42 43 44 45 46 47 48 49 1950

Mr. DONNELLY. This is the story on corn and it covers the period from 1911 to 1950. These are figures of the Bureau of Agricultural Economics. Here we have the historical average price of corn for this period at 73 cents for the State of Missouri. You can see it on that blue line. But that is not enough for the corn. They have it pegged at $1.30. The $1.30 figure was exceeded only seven times in the course of 40 years.

Mr. RABAUT. When was this report made up?

Mr. DONNELLY. 1950. Their report is dated July 28, 1950.

Mr. RABAUT. What was the price of corn in 1950?

Mr. DONNELLY. The price of corn in 1950 in Missouri was $1.46.

Mr. RABAUT. And they have used a figure of $1.30?

Mr. DONNELLY. The $1.30 figure is for the whole 40-year period. They averaged it out.

Mr. RABAUT. It looks like a poor guess.

Mr. DONNELLY. Here [indicating] the historical figure for corn is 70 cents. I want the committee to note that this is a composite figure for the Missouri River Valley. That is for all the States in the valley. The chart on the board is simply to give the committee an idea of what occurred in the State of Missouri, as in other States in the valley. Here on this chart we have the figure of 70 cents for Missouri; actually the price was 73 cents, but it will average out to 70 cents.

Mr. RABAUT. Where did this information come from?

Mr. DONNELLY. The Bureau of Agricultural Economics.

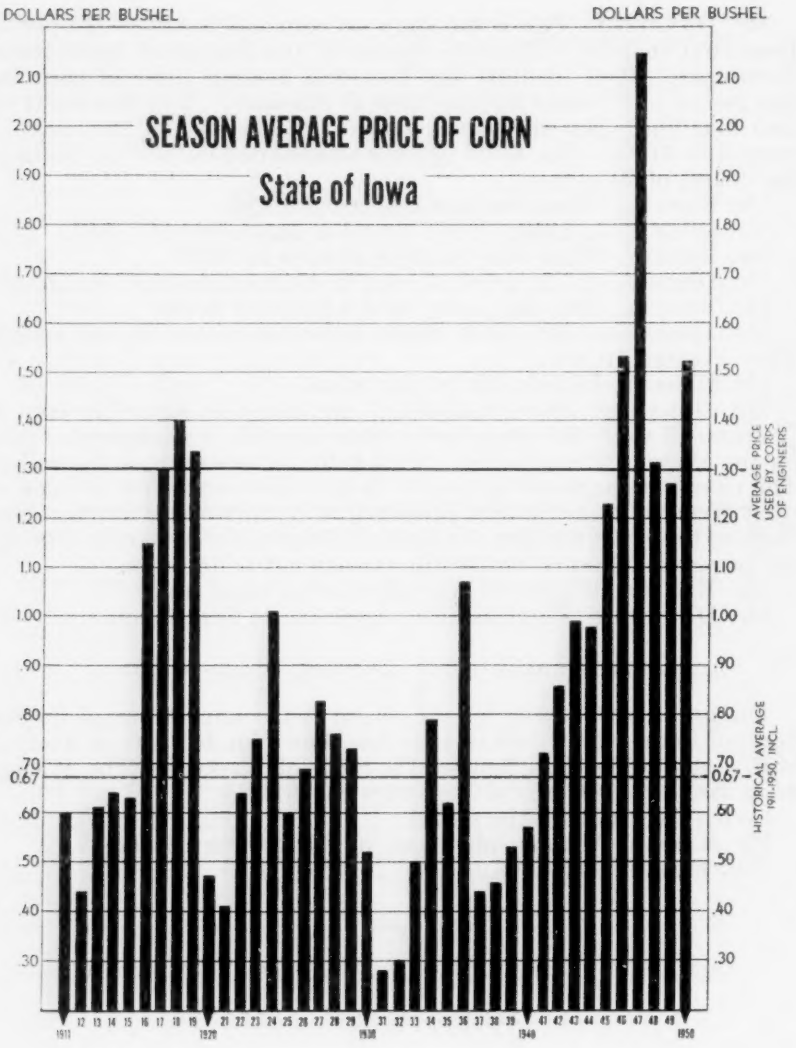
SEASON AVERAGE PRICE OF CORN, STATE OF IOWA

The next chart I have for the record is the same material for the State of Iowa. The State of Iowa has shown for 40 years an average of 67 cents, lower than that for the State of Missouri. The average price used by the Corps of Engineers was $1.30.

I offer this chart for the record.

Mr. RABAUT. Without objection, it will be inserted here.

(The chart is as follows:)



Mr. DAVIS. Did they give any explanation of why they used the $1.30 figure in their tables?

Mr. DONNELLY. I am advised that that was the average price at the time the report was made in 1950.

General PICK. Mr. Chairman, I have another version of it. May I state that now?

Mr. RABAUT. Yes.

General PICK. The version I get now is that in estimating benefits it is assumed that those amounts would be the average prices on these grains for the next 50 years.

Mr. DONNELLY. You mean that in the next 50 years there is going to be a 100-percent difference?

General PICK. I do not know, but prices are trending upward.

Mr. RABAUT. Of course, we have to predicate things on facts.

General PICK. I have just been told that those prices were the projected figures for 50 years.

FLOOD CONTROL

EFFECT OF ENGINEERS' WORK ON FLOODS

Mr. DONNELLY. The next chart gets into a little different facet of the problem. Here we are getting into a field where the Corps of Engineers has spent over a quarter of a billion dollars on pile dikes and trail dikes, revetments and levees and bank stabilization, and everything else. Now, what effect does all that have on floods? Has that work increased the floods or has it decreased the floods?

I offer this chart for the record.

Mr. RABAUT. Without objection, the chart will be inserted at this point.

(The chart is as follows:)

U. S. Department of the Interior Geological Survey—Missouri River, St. Joseph to Hermann, Mo., comparison of discharges at flood stage by years

[Cubic feet per second]

Year	St. Joseph		Kansas City		Waverly		Boonville		Hermann	
	17 feet	Rating Oct. 14, 1929 stage	22 feet	Rating Oct. 11, 1929 stage	18 feet	Rating Oct. 16, 1929 stage	21 feet	Rating Oct. 16, 1929 stage	21 feet	Rating Oct. 17, 1929 stage
1926										
1927										
1928										
1929			225,000	22.0	208,000	18.0	268,000	21.0	315,000	21.0
1930										
1931										
1932					150,000	15.6	215,000	19.0		
1933										
1934										
1935			190,000	20.0	137,000	14.8	192,000	18.1	212,000	17.2
1936										
1937										
1938	124,000	14.0							215,000	17.3
1939									217,000	17.4
1940										
1941			160,000	18.3	134,000	11.7	170,000	17.1	212,000	17.2
1942	132,000	14.3	172,000	19.0	131,000	14.5	172,000	17.2	202,000	16.8
1943	135,000	14.4	188,000	19.9	140,000	15.0	175,000	17.3	197,000	16.6
1944	135,000	14.4	196,000	20.4	136,000	14.8	184,000	17.7	216,000	17.4
1945	145,000	14.8	200,000	20.6	143,000	15.1	185,000	17.8	212,000	17.2
1946										
1947	135,000	14.4	198,000	20.5	125,000	14.2	176,000	17.4	214,000	17.3
1948	150,000	15.0			136,000	14.8	193,000	18.1	225,000	17.7
1949	140,000	14.6			144,000	15.2	190,000	18.0	210,000	17.1
1950	135,000	14.4			140,000	15.0	200,000	18.4	225,000	17.7
1951	145,000	14.8	210,000	21.2	135,000	14.7	198,000	18.3	208,000	17.0

Mr. DONNELLY. This chart will show that the corps' work has actually increased the floods. Every figure on this chart represents a flood.

The Corps of Engineers started their work in 1927, and have spent more than a quarter of a billion dollars on it. Their work did not have too much effectiveness until you get into 1935. There was a flood that year. There was a dry season in 1936 through 1940.

And then we have, every year from 1941 on, flood, flood, flood, flood, flood—all the way through.

It is recognized, of course, that we had dry years in the thirties and wet years in the forties. But the criterion, the governing factor, is the carrying capacity of the river.

Let us take this first one here, Hermann, Mo.

In 1929 the United States Geological Survey computed the gage reading at Hermann, Mo., at flood stage at 21 feet. There was no spillage until the gage showed 21 feet. The carrying capacity of the river at 21 feet was 315,000 cubic feet of water per second.

Let us see what the corps has done to the river at Hermann, Mo. In 1951, the river spilled its banks with 208,000 cubic feet per second. If the river had been left alone, as it was in 1929, the gage reading would have been only 17 feet. So there was a flood in Hermann, Mo., in 1951; a flood in 1950 at Hermann; a flood in 1949; a flood in 1948, and so on. Actually, the river will spill quicker at Hermann, Mo., now than it did in 1929 before the Corps of Engineers spent a quarter of a billion dollars on bank stabilization.

Let us take the next place, Boonville, Mo. In 1929 the United States Geological Survey fixed a gage reading at flood stage at 21 feet. Let us go down the column to 1951. In 1951 the river flooded at 198,000 cubic feet per second. If the river had been left alone as it was in 1929, that gage reading would have been only 18.3 feet, which would have been less than flood, in 1951.

Let us take 1950: A flood, with a gage height of 18.4. In 1949 there was a flood at 190,000 cubic feet per second, and in 1929 the gage would have read 18 feet, which was less than flood stage.

We have the same story at Boonville, Mo.; floods every year.

Let us go to the next one, Waverly, Mo. The United States Geological Survey has a gage height at flood stage in 1929 of 18 feet. At 18 feet the carrying feet of the river was 208,000 cubic feet of water per second. That is from bank to bank, the river would carry along 208,000 cubic feet of water per second and it would not spill its banks until it hit 18 feet.

Let us drop down here to 1951. This is right across the heart of Missouri. In 1951 there was a flood. The river was discharging only 135,000 cubic feet of water per second and yet it spilled its banks. If the river had been left alone at the gage reading that they had in 1929, it would have been 14.7 feet.

Mr. RABAUT. I want to ask you a question. I am not acquainted with the location of these various places. Are they spread over a considerable distance?

Mr. DONNELLY. Yes, sir. If you take the width of the State of Missouri, and start at St. Louis, and go over to Kansas City, Hermann is about one-third of the way and Boonville is about one-third of the way, and Waverly is about one-third of the way.

Mr. RABAUT. Very well.

STAGES OF MISSOURI RIVER FOR INDICATED DISCHARGES AND PRECIPITATION DATA

Mr. DONNELLY. The next charts which I would like to offer for the record are entitled "Stages of Missouri River for Indicated Discharges Based on Records Compiled by the United States Department of

STAGES OF MISSOU
FOR INDICATED DIS
BASED ON RECORDS

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GEOLOGICAL SURVEY
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ROLLA, MISSOUR
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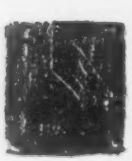
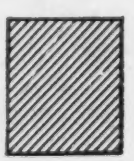
Note: Precipitation data prepare

Bar graph shows average water-y
drainage area above station indi

 average pecipitation above normal

 av
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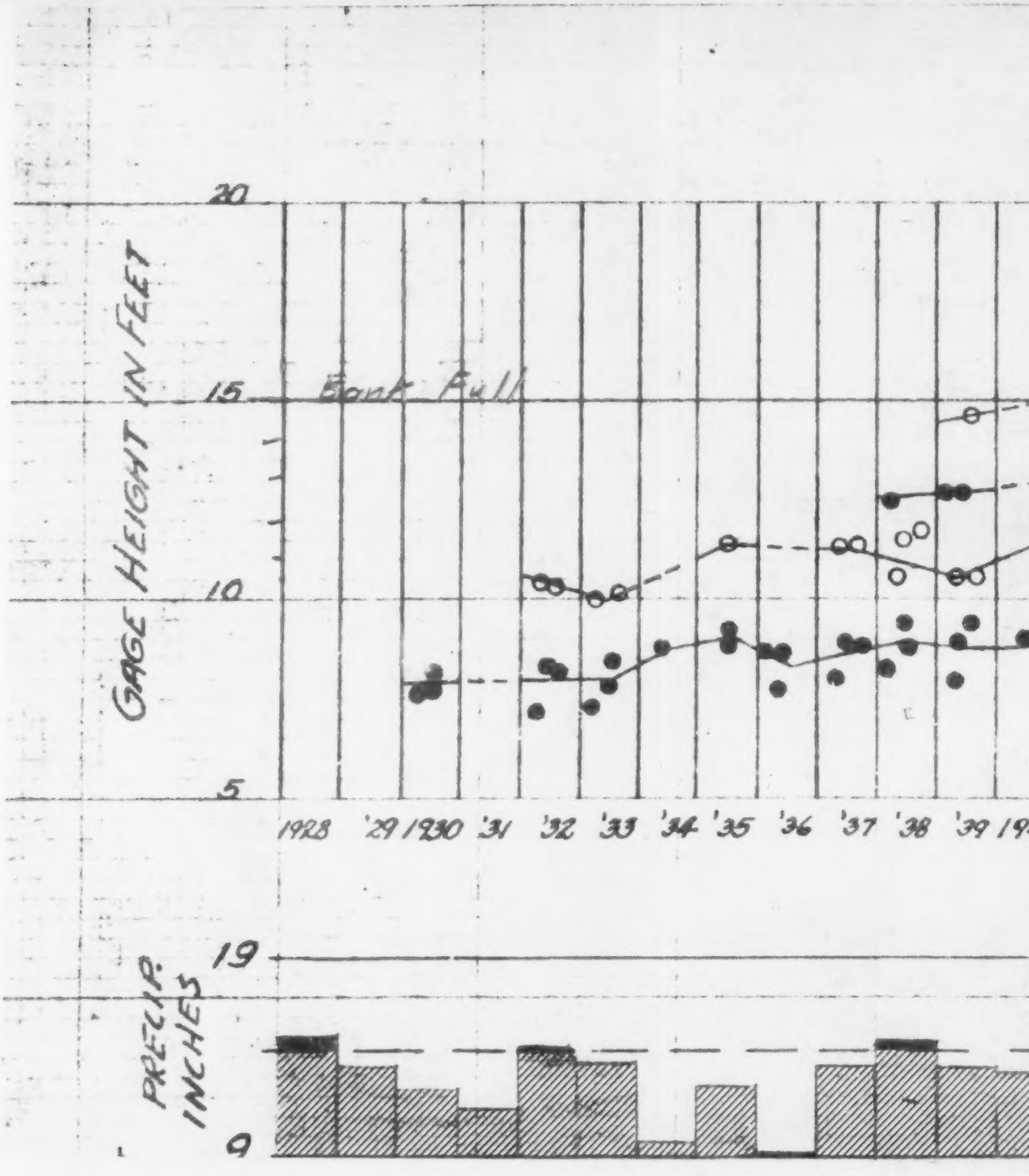
20
15
10
5
Bank Full
GAGE HEIGHT IN FEET
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'29
1930
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19
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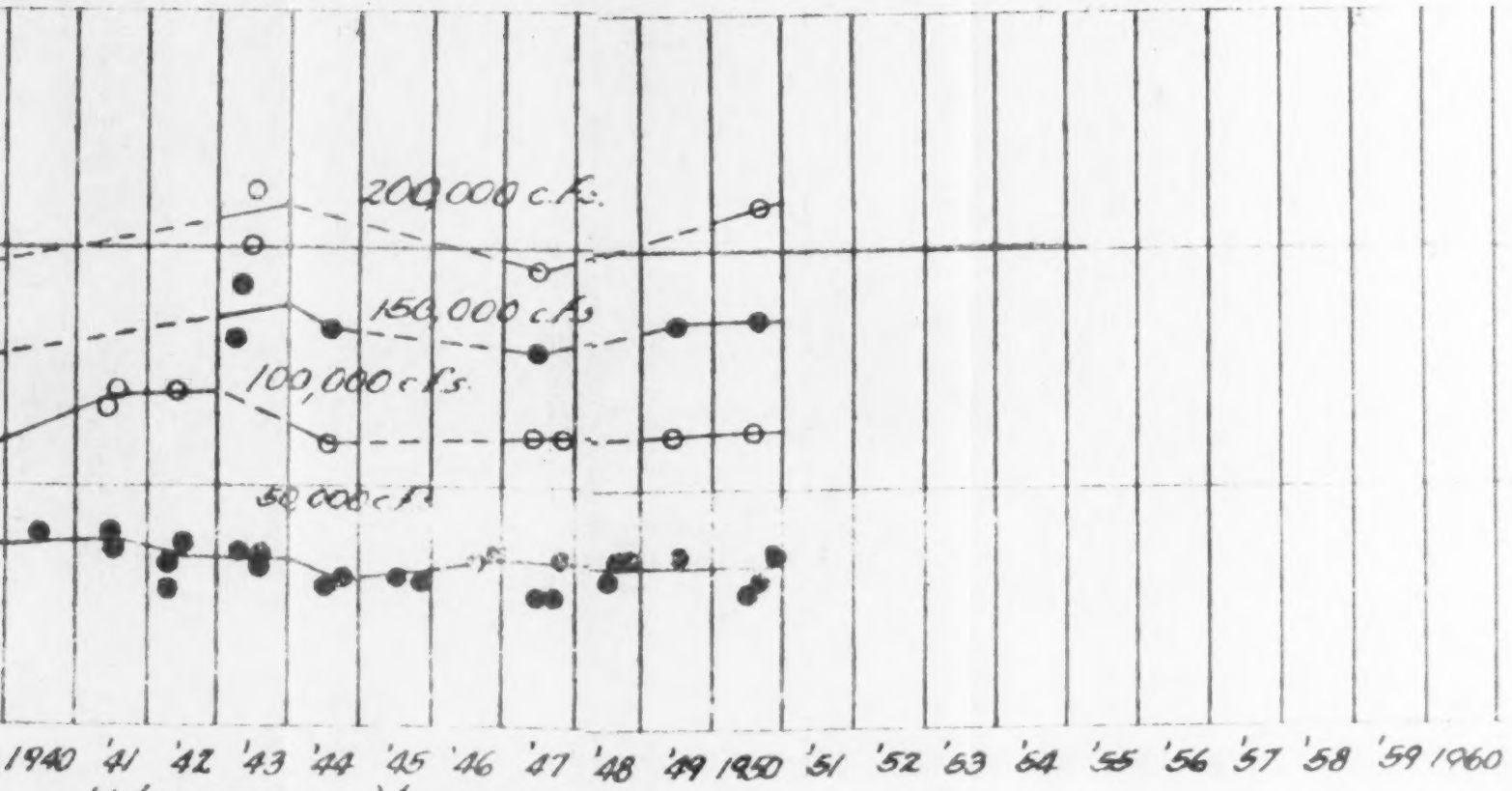
200,000 c.f.s.
150,000 c.f.s.
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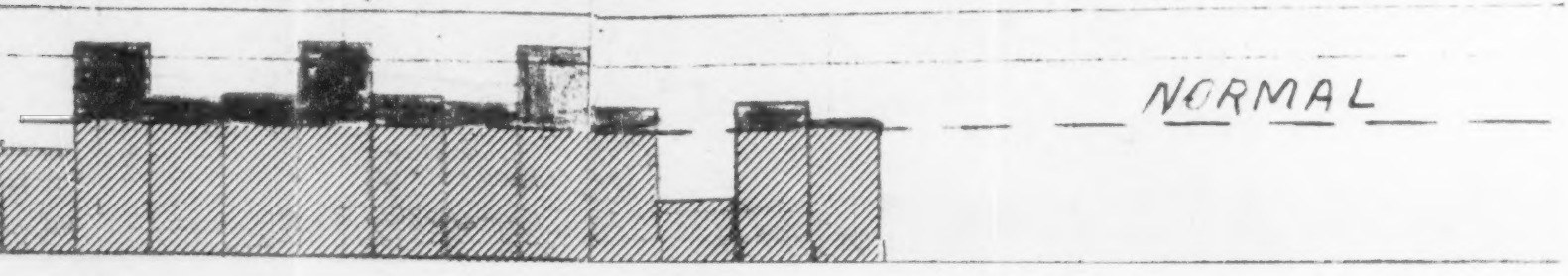
1940 '41 '42 '43 '44 '45 '46 '47 '48 '49 1950 '51 '52 '53 '54 '55 '56 '57 '58 '59 1960
WATER YEAR
PIERRE, S. DAK.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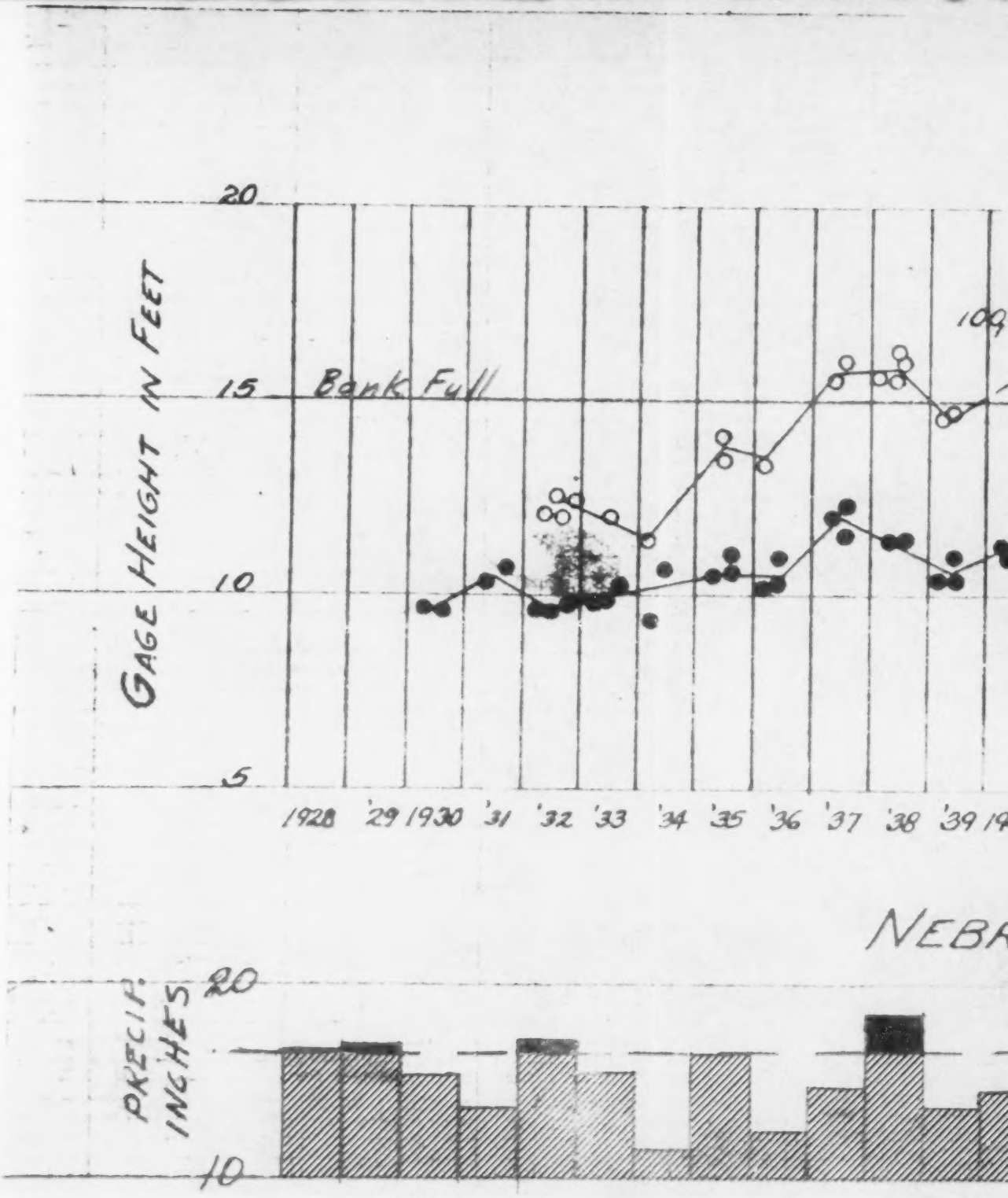
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GAGE HEIGHT IN FEET
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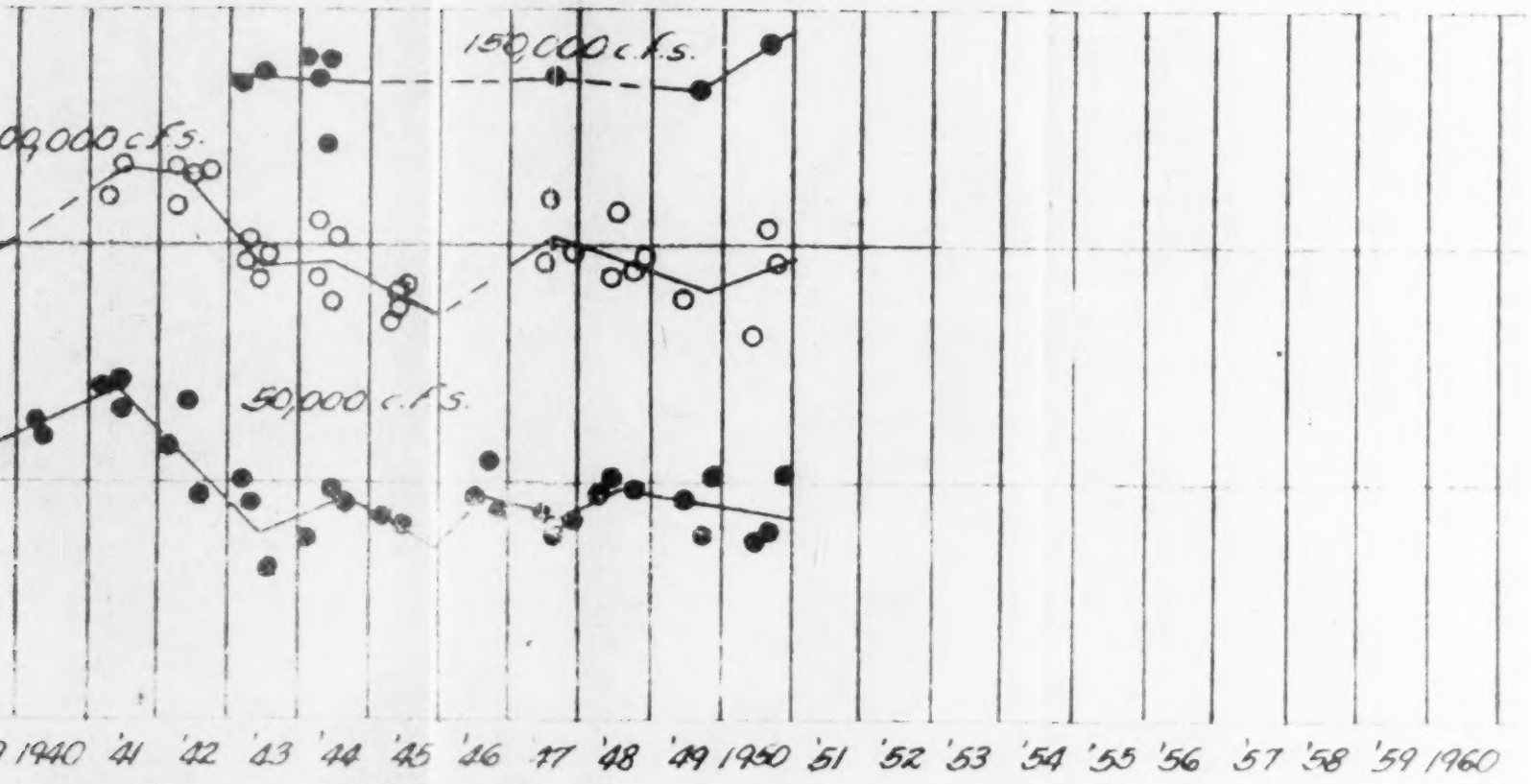

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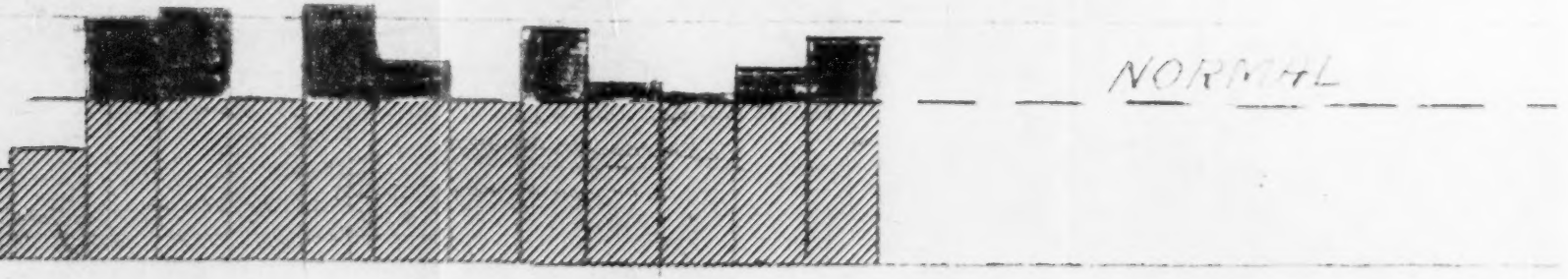

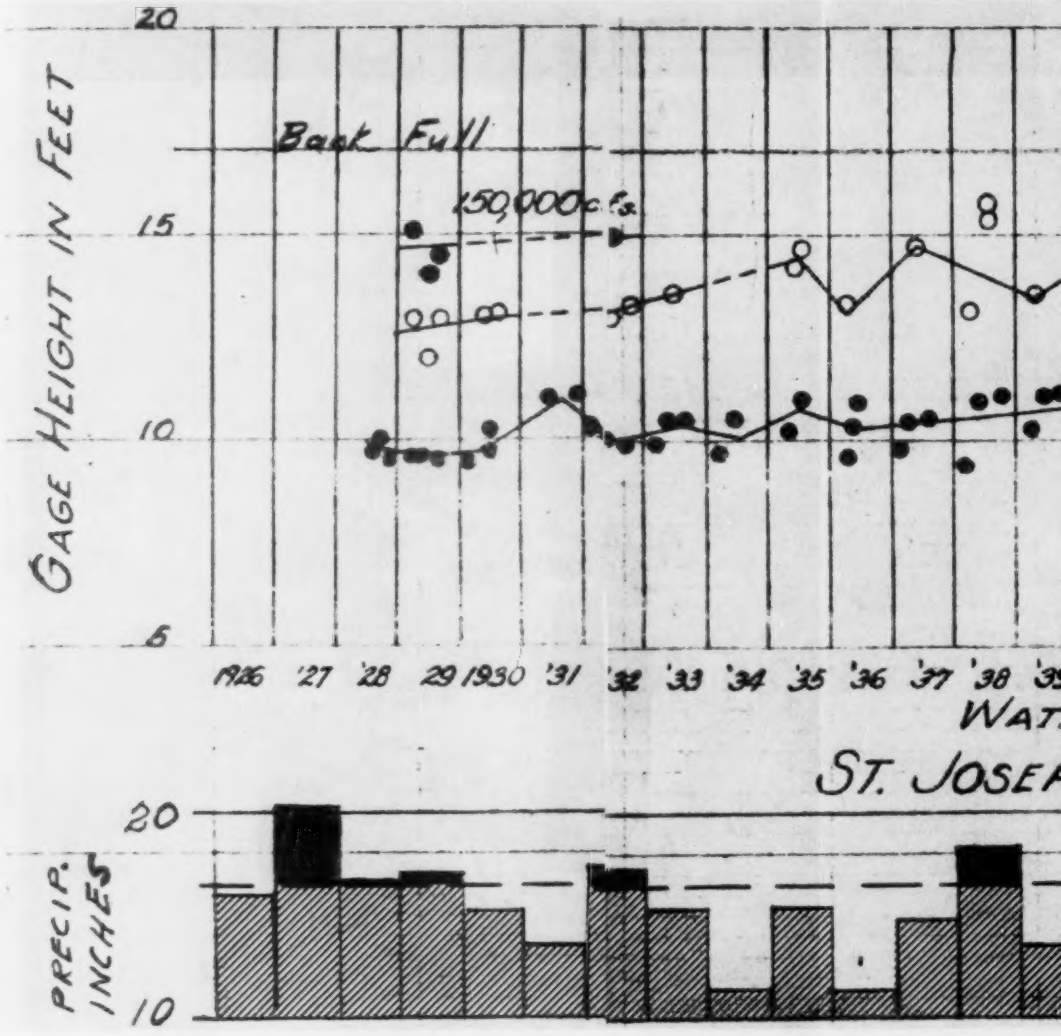
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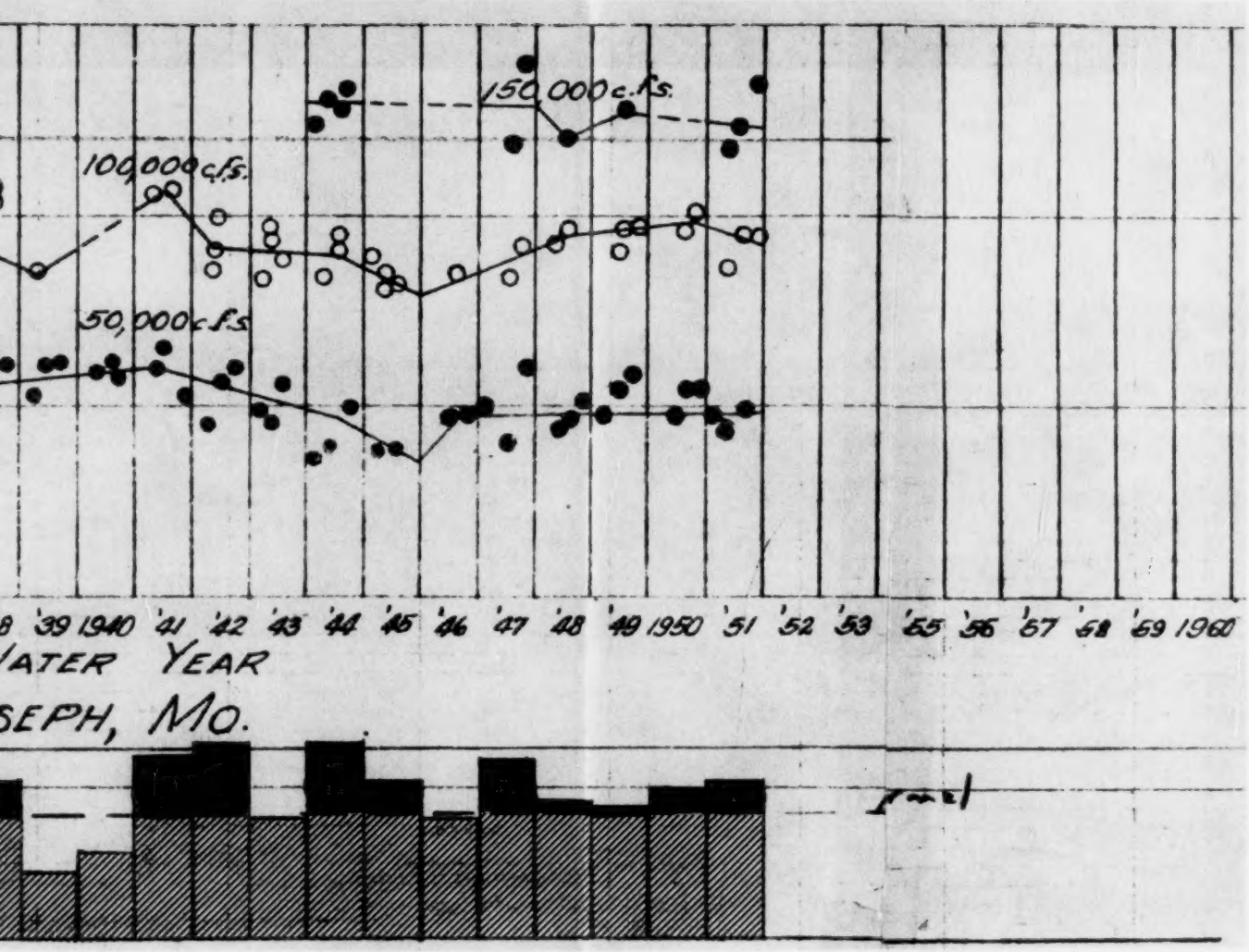
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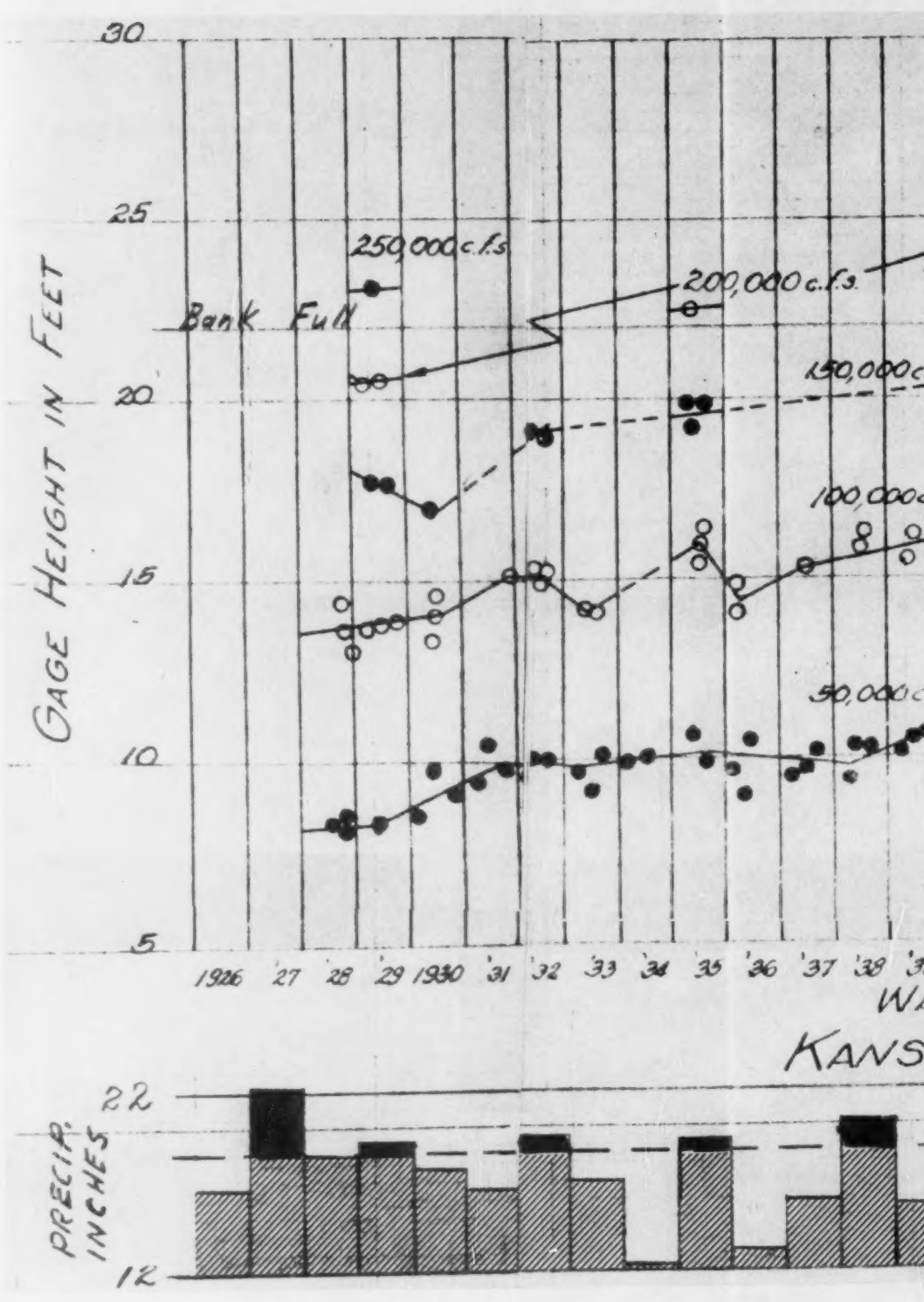
ATER YEAR
SEPH, MO.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GAGE HEIGHT IN FEET
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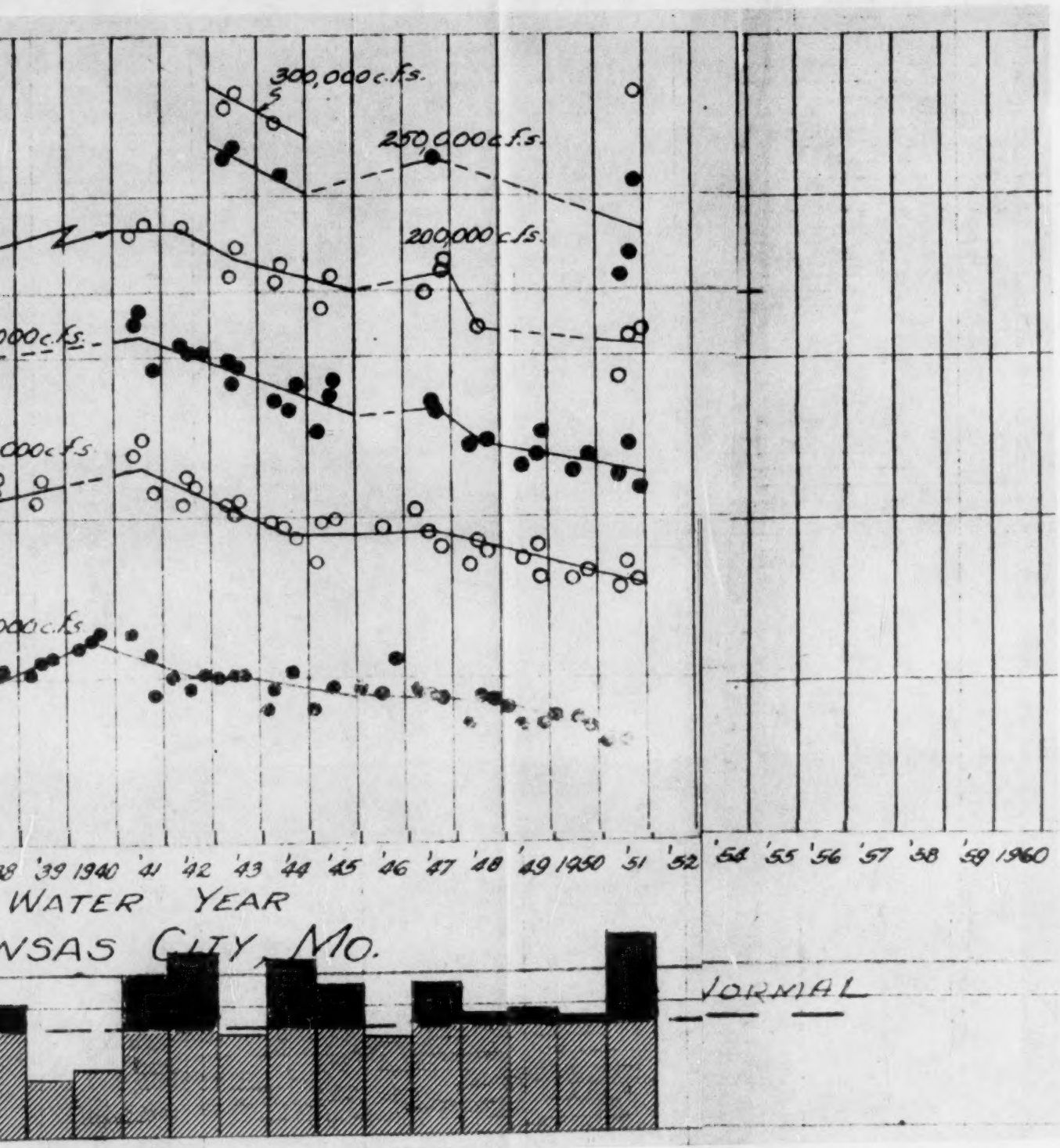
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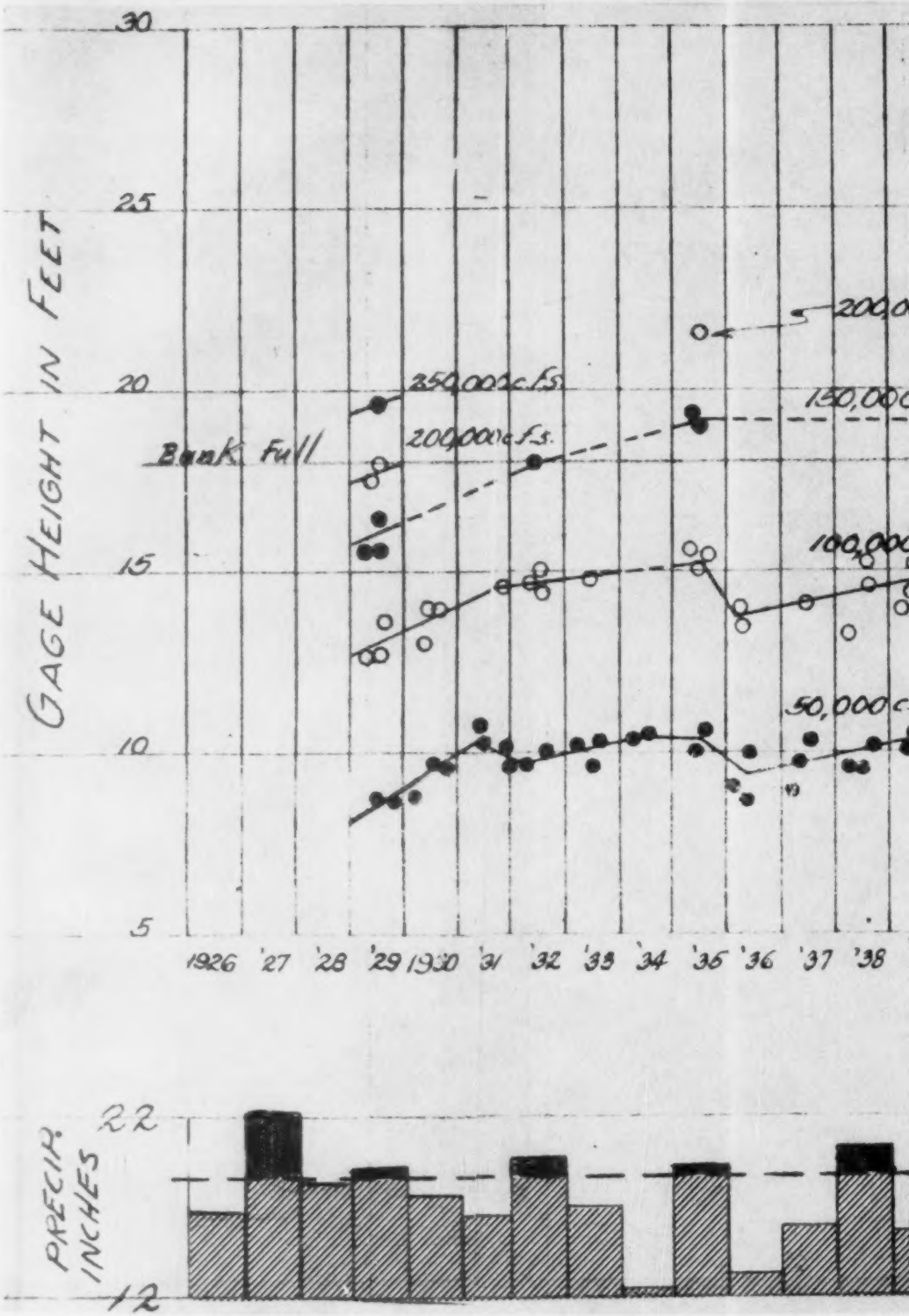
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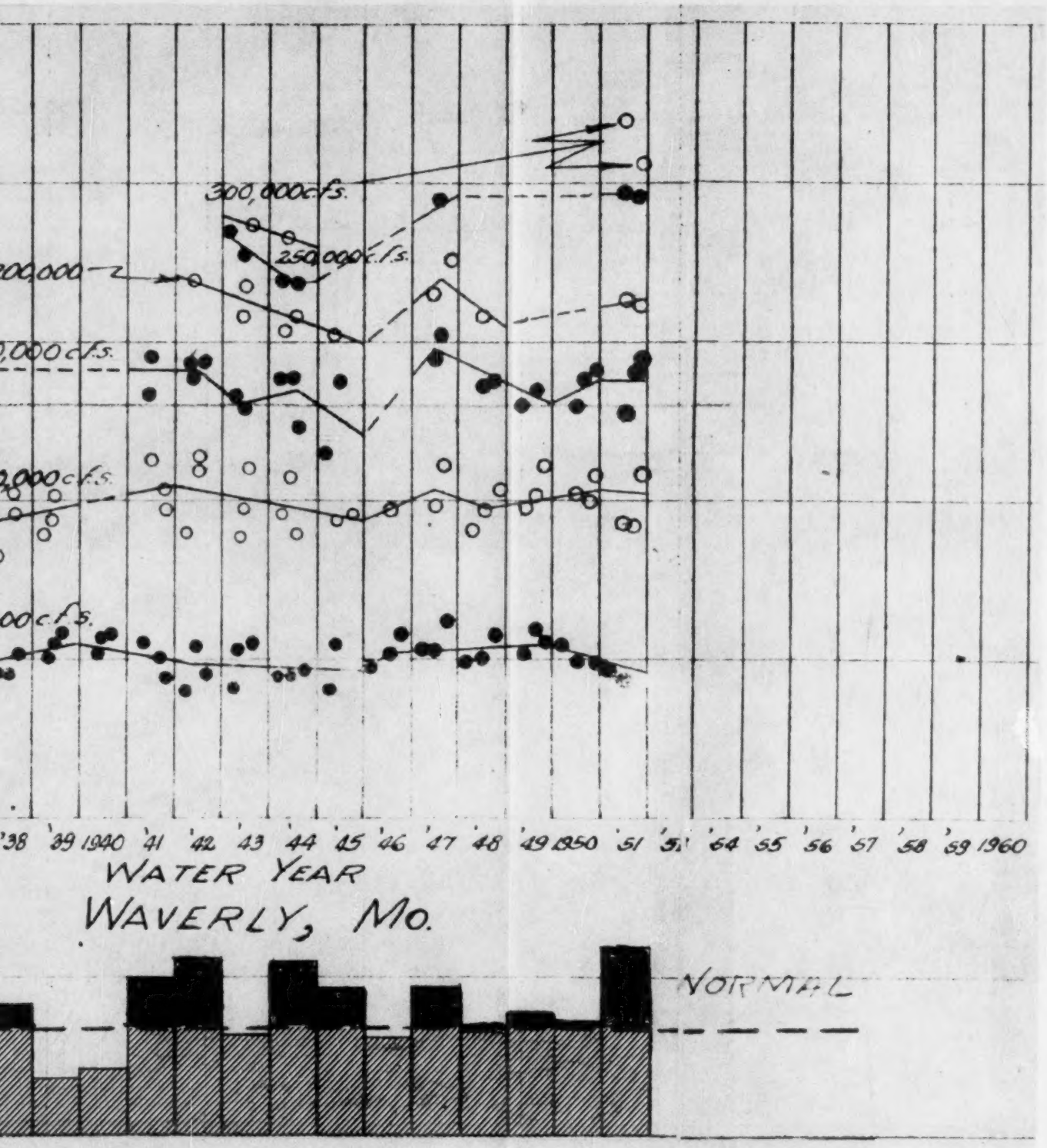
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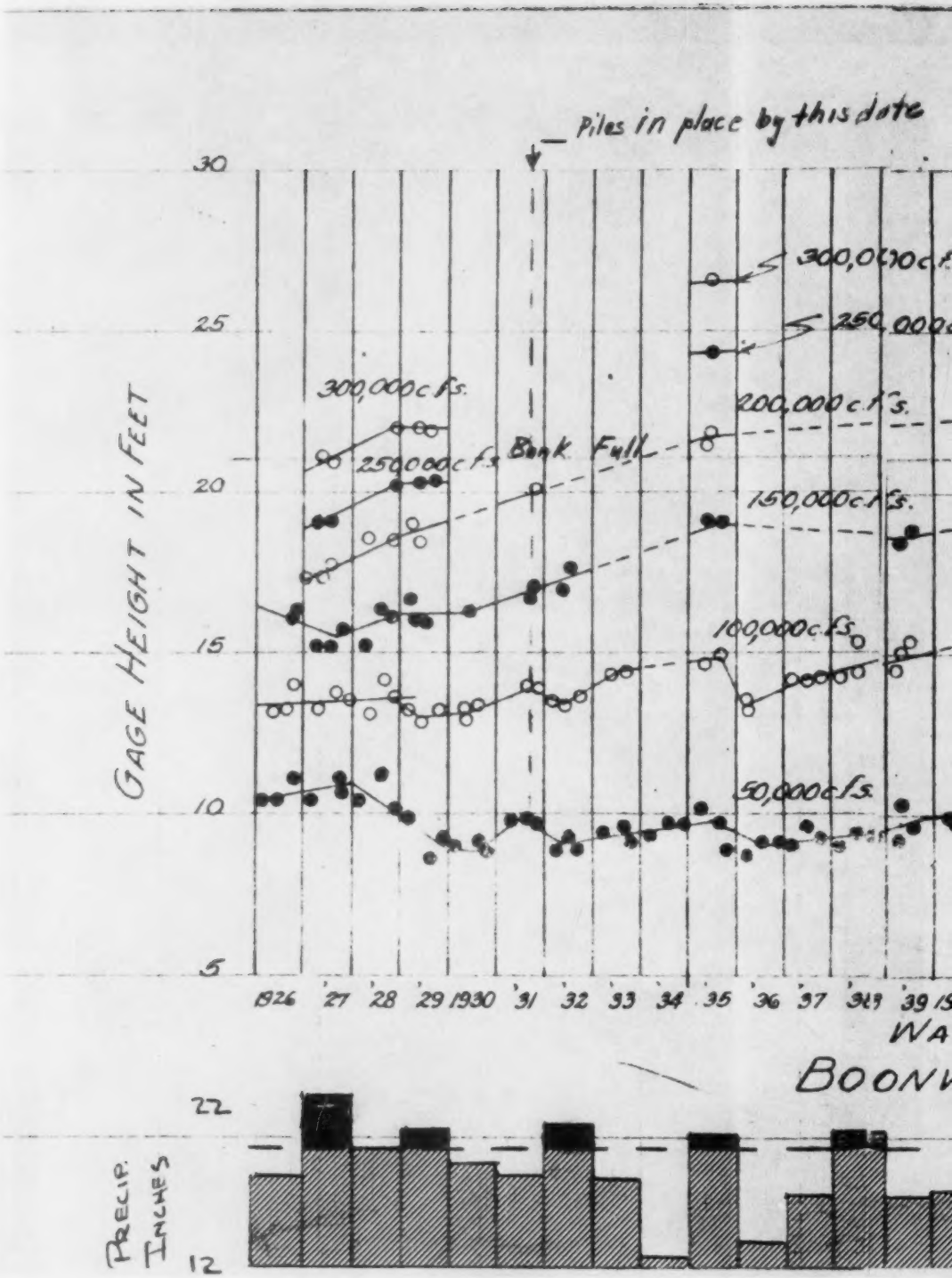
Piles in place by this date
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GAGE HEIGHT IN FEET
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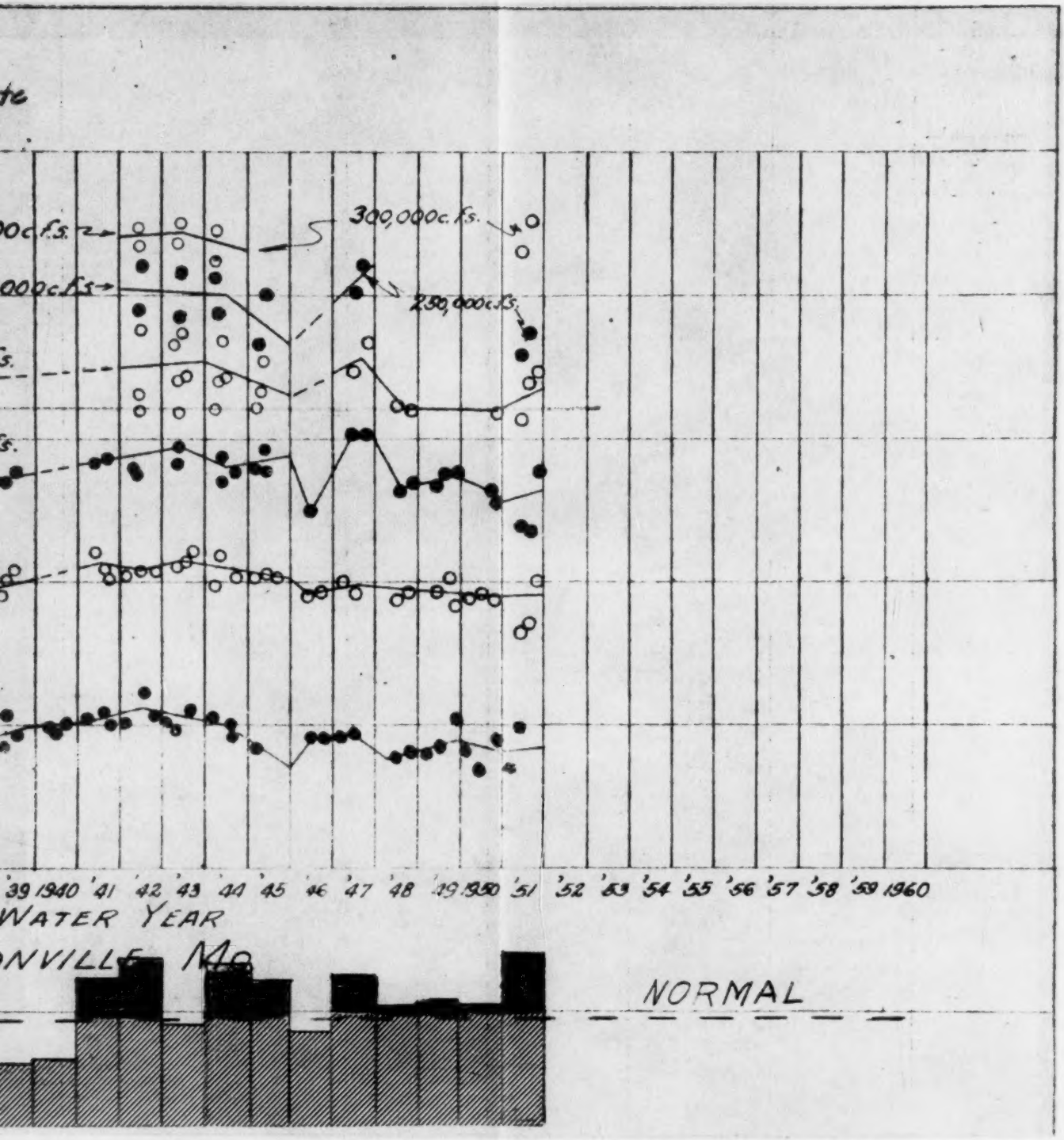
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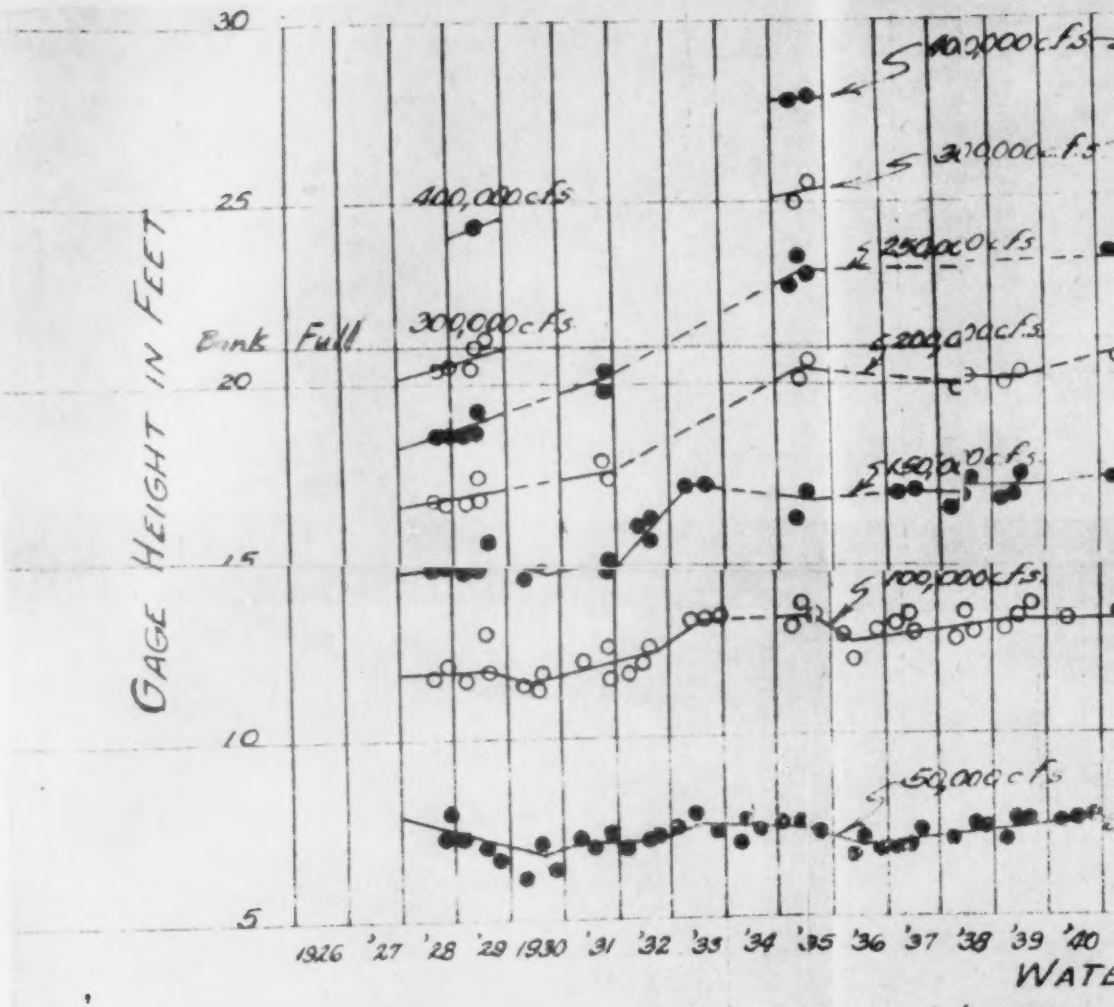
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GAGE HEIGHT IN FEET
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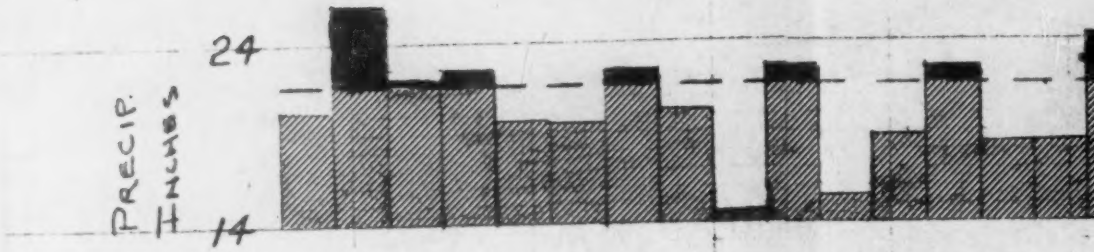
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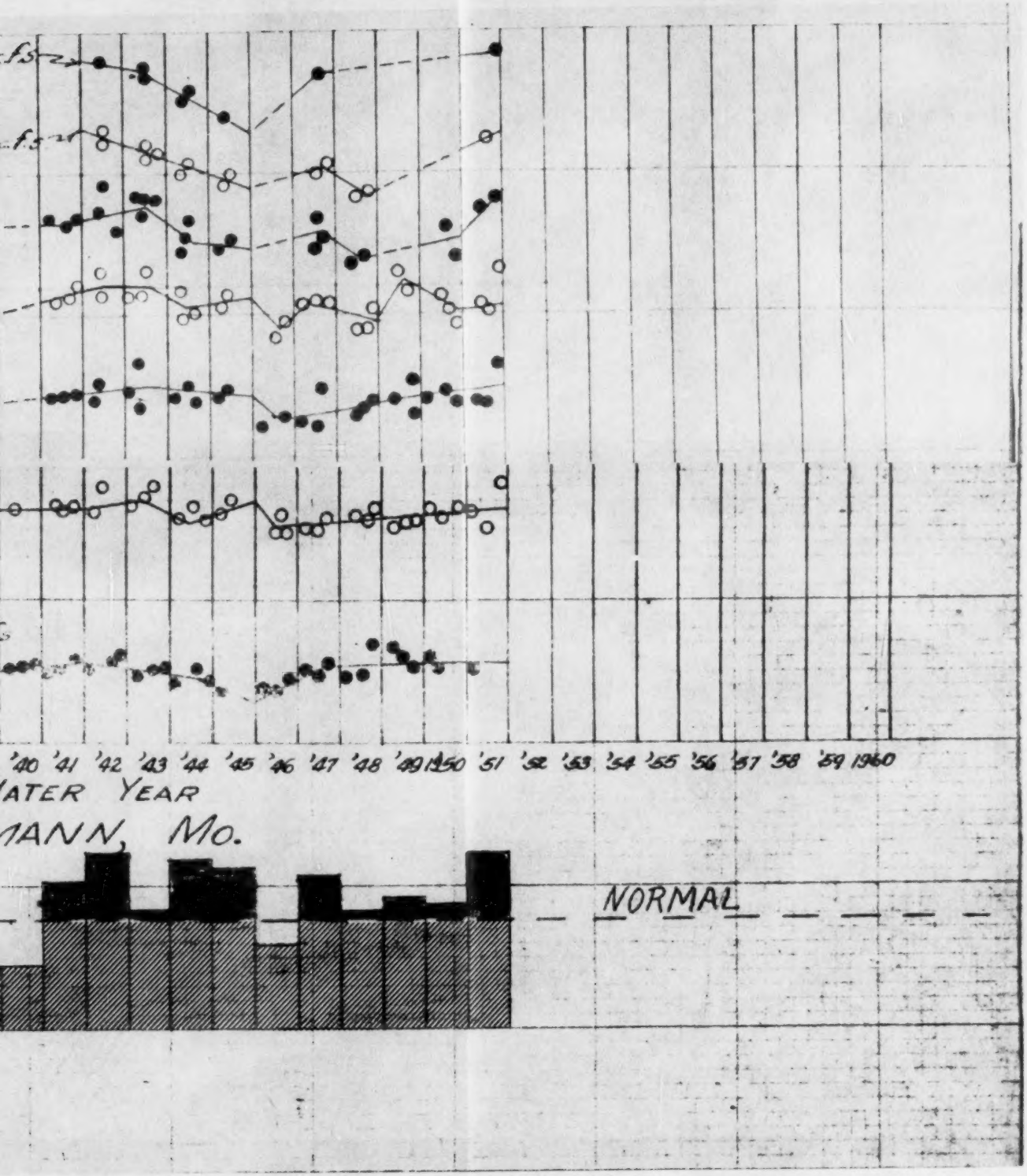
'40 '41 '42 '43 '44 '45 '46 '47 '48 '49 1950 '51 '52 '53 '54 '55 '56 '57 '58 '59 1960
ATER YEAR
MANN, MO.
NORMAL

Interior, Geological Survey, Water Resources Division, Rolla, Mo., in cooperation with the Missouri Geological Survey and Water Resources Division."

Mr. RABAUT. These charts will be inserted at this point.

(The charts face p. 42.)

Then we have in each case precipitation data prepared by the United States Weather Bureau.

Mr. DONNELLY. You can see here the dry years and the wet years. The forties were the wet years and the thirties were the dry years.

PIERRE, S. DAK.

This portion of the river is at Pierre, S. Dak., and has not been affected by any of this bank stabilization work of the Corps of Engineers.

We have here the flood stage at 15 feet gage height reading.

We have here, in 1943, 200,000 cubic feet per second which exceeded the flood stage. So there was a flood in 1943 at Pierre, S. Dak.

The next time 200,000 cubic feet per second occurred was in 1947 and there was no flood, which meant that the carrying capacity of the river was greater. That was because there was the scouring action in the wet years. The river was moving out the silt at the bottom and increasing the velocity of the river, which increased the carrying capacity.

So here we have shown in 1947 this scouring action of the river, in the wet years.

This is a natural portion of the river, untouched by the Corps of Engineers. There was no bank stabilization, no revetment; there were no pile dikes or trail dikes, or anything else.

NEBRASKA CITY, NEBR.

Here we have Nebraska City, Nebr., and again we can see the scouring action in the wet years, as shown here [indicating]. So that, although the river flooded in 1936 and 1937 at 100,000 cubic feet per second and again in 1941 and 1942, the river did not flood at 100,000 cubic feet per second in 1943, 1944, and 1945. In other words, the river could carry more water as the bed of the river scoured out, and the silt was gotten out and the water moved faster. So there was not a flood.

Mr. KERR. What do you mean by the scouring action?

Mr. RABAUT. The river washed itself out.

Mr. DONNELLY. The speed of the water increased.

ST. JOSEPH, MO.

Mr. DONNELLY. This next section of this chart shows the river moving on downstream. St. Joseph is below Omaha. Here we are at Kansas City [indicating]; here is Waverly, Mo. Let us see what the flooding action is.

We move over to 1943 and 1944 and at St. Joseph, Mo., we had flood stage at 150,000 cubic feet per second. In 1948, with the scouring action going on, the velocity had increased, so the flood stage had been reached at 150,000 cubic feet per second, but there was no spillage.

In 1949, however, there was a spillage at that same reading of 150,000 cubic feet per second. This is in the part of the area where the Corps of Engineers had been working on building bank stabilization improvements.

KANSAS CITY, MO.

Let us go to Kansas City, Mo. Here we get the results of the scouring action in the wet years.

Each of the various categories has dropped down; that is, the gage height reading at the various figures for so many thousand cubic feet per second, which are 50,000, 100,000, 150,000, and so forth.

At Kansas City, as you can see, they had a flood in 1940, 1941, 1942, 1943, 1944, and 1945. It was decreasing each year.

That was a flood of 200,000 cubic feet per second. Actually in 1943 and 1944 the river got up to 300,000 cubic feet per second at Kansas City.

Now we come over here to 1947 and we find at 200,000 cubic feet per second it is above the carrying capacity of the banks. In 1948 it has dropped down, so that the same quantity of water is being carried without a flood. The same thing is true in 1951.

WAVERLY, MO.

Let us go down to Waverly, Mo. At Waverly, we have a story of flood after flood after flood. Here is the gage reading at flood stage. It is about 18 feet. This is the portion of the river where the Corps of Engineers was putting in these bank-stabilization improvements.

Back in 1929 we had no flood at 150,000 cubic feet per second. The Corps of Engineers then went to work on the river and started compressing and narrowing the banks.

In 1931 the river hit flood stage at 150,000 cubic feet per second. Actually there was a flood in 1935 at that reading of 150,000 cubic feet per second. We have in 1941 a flood at that reading; in 1942 a flood at that reading; in 1943 a flood at that reading; in 1944 a flood at that reading; in 1945, the same; in 1947, the same; in 1948, a flood. In 1949, it hit flood stage; in 1950 a flood; in 1951 a flood at Waverly, Mo., at 150,000 cubic feet per second after the Corps of Engineers had been working 15 years in improving the river. Whereas, in 1929, before they started and at that same velocity and carrying capacity, 150,000 cubic feet per second, no flood.

Mr. DONNELLY. This now shows the two areas of the river below Waverly.

Mr. RABAUT. Where are these charts derived from?

Mr. DONNELLY. These are official statistics based on records compiled by United States Department of the Interior, Geological Survey, Water Resources Division.

BOONVILLE, MO.

Now we get the story at Boonville, which is a gage-reading station in the middle of the State, and Hermann, which is over toward St. Louis.

We have the flood stage at 21 feet at Boonville. Now we have the same situation on flooding as we saw at Waverly, with a reading of

200,000 cubic feet per second, in 1927, no flood; 1927, 1928, 1929, no flood; in 1931, no flood at that reading of 200,000 cubic feet per second.

The corps got its piles in place by this date, which is shown as 1931, and as soon as the corps got those piles in place, the floods came.

Here we had a flood in 1935 at 200,000 cubic feet per second; a flood in 1942, 1943, 1944, 1945, and 1947—all floods at this place. Then we get to 1948. The river hit flood stage at 200,000 cubic feet per second. It did not spill. The same thing in 1950. There was a substantial flood in 1951 at 200,000 cubic feet per second.

So we have the Corps of Engineers spending a quarter of a billion dollars on narrowing the banks and yet there are more floods than they ever had before.

HERMANN, MO.

Let us look at Hermann, Mo. We have a gage height of 21 feet for flood stage running across here. Let us take this figure, 250,000 cubic feet per second. This is a little lower down the river, toward the mouth. The river is wider and carries more water. It is closer to the mouth.

Let us take the figure 250,000 cubic feet per second. We start with 1928. The river amply carried that below flood stage. The same thing is true in 1931. But the Corps of Engineers got their piles in place and there was a flood in 1935.

Coming over here to 1941, at 250,000 cubic feet per second, there is a flood for 1941, 1942, a flood for 1943, 1944, a flood for 1945, for 1947, for 1948, a flood for 1950 and a flood for 1951.

Mr. Chairman, that concludes the figures that the staff wanted to invite the committee's attention to at this time.

General PICK. Mr. Chairman, may I make a request that these charts be made available to us?

Mr. RABAUT. They are going to be a part of the record.

General PICK. But I would like to study them.

Mr. DONNELLY. You can study them in the record, General Pick. They will be printed in the record.

Mr. RABAUT. They will be available to you.

General PICK. But I cannot comment on them. I do not know anything about them.

Mr. RABAUT. You can have them tomorrow or the next day, in the record.

STATEMENT OF CHIEF OF ENGINEERS

General PICK. Mr. Chairman, we have heard given to the committee this morning the results of an extensive study by the staff of the committee. It covers a very broad field on the Missouri River, both in connection with the navigation project and the question of bank erosion control.

There has been discussed at length a report that was prepared in the division office out in Omaha by the division engineer, under his own authority, to study any going project in his division at any time for whatever benefits he thinks it might bring. He asked the Board of Engineers for Rivers and Harbors informally to send some people out there to do some work in connection with it.

I understand that the report was completed and has been in my office approximately a year. The study was made without knowledge or consent of the Chief of Engineers. It was submitted to my office for approval. If it were considered by the Chief of Engineers, it would not be proper to refer it formally to the Board of Engineers for Rivers and Harbors because it had no congressional authorization. The report has been in my office I understand until this time; it has not been acted on.

We did not know anything about this hearing until last Thursday and did not know about the staff report until this morning; so I am not prepared to make an intelligent comment on the various and sundry charts and figures which have been shown.

Mr. Chairman, I would just like to make a general statement for what it is worth. I have here a picture which shows what the river does when it erodes the banks. There is a very great need for flood control in the Missouri Basin. The river, when it gets to flood stage does terrific damage. The question of raising flood heights due to the dikes in the river has come up from time to time. We have always answered that in a general way by saying that these works did not in our opinion materially add to any flood heights in major floods.

I do want to say that in my opinion the dikes that have been put in the river have had a tremendous effect in stabilizing the location of the channel. My experience on the river has been short, a little over 10 years. But during that time I have seen some tremendous changes take place up the Missouri River, above Omaha, where the stabilization work has not been completed.

We have a case up there now where some people built a toll bridge across the river and it appeared that if any place in that part of the valley were stable, it was there. But the river decided to leave the bluff and move back the other way. The toll bridge was built and completed. But now the river has moved west more than three-quarters of a mile, and is not under the bridge. The last time I was out there, 3 weeks ago, there was a new river channel growing. The river just went across the land like these big meanders that are shown in the picture. That has been going on in the Missouri River Basin since the glaciers receded.

The dikes have had the effect of stabilizing the channel in one location.

In my opinion, the prevention of bank erosion is an important benefit to the people who live in the valley.

As to the navigation project, nobody maintains that that navigation project has ever been completed or has ever been used extensively.

I do not want to argue this question at all, but to take the matter of sand and gravel. It is true that that is dug in the river and it is moved by barges to the nearest place where it can be taken out. Now, what is that for? That is for consumption in the various localities along the river. The river is the only source of sand and gravel in that particular part of the valley. It would cost much more, I suppose, to get it out if you did not put it on barges, if you just tried to pump it out in some way. That traffic is legitimate tonnage.

Mr. Chairman, that is all I have to say. I did not know what was going to be covered in the meeting.

I understand that you want to get this record printed as soon as you can. All I am asking is that you remember that what we are trying

to do out there is under authority which has been imposed upon the Chief of Engineers by the Congress. If we have overstepped our limits, if we are doing it incorrectly, I think it is fine if we are checked up and told what to do, and are made to do it right. Other than that I have nothing else to say.

Mr. CANNON. We very much appreciate your attendance and your cooperation General Pick. The committee wants all the light and all the information on the subject we can get from every possible source. The information submitted this morning by the staff of the committee is based on data compiled by members and officials of the staff of the Board of Engineers for Rivers and Harbors, and of the Corps of Engineers, which is the most authoritative information that could be submitted.

If you care to submit anything further, we should be glad to have it now, or at any time up until 7 o'clock tonight when we go to press. This is the last week of the Congress and we must issue our report tonight. But anything further you care to submit in the way of comment or data will be in order until 7 o'clock tonight and we should be glad to receive it. We very much appreciate your interest and the collaboration of your staff.

General PICK. Thank you very much, Mr. Chairman.

Mr. RABAUT. The committee stands adjourned.

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